Volume XXVIII.
Number 2

NOVEMBER, 1904.

$2.00 per year.
$5.00 with Directory.

TEXTILE WORLD RECORD

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LORD & NAGLE COMPANY · Boston & Philadelphia

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The Textile-Finishing Machinery Co.

17 EXCHANGE PLACE, PROVIDENCE, R. I.

Mercerizing Machinery for Piece Goods and Yarn in the warp or chain

Singeing Machines,

Boiling Kiers,

Washers, Squeezers,

Chemic and Sour

Rusden Patent

Continuous Chainless

Steamer,

Aniline Agers,

Dyeing Machines,

Open Soapers,

Blanket Washers,

Color Kettles,

Horizontal or Vertical Drying Machines, with Copper or Tinned Iron Cylinders,

Automatic Tentering Machines,

Water and Starch Mangles,

Dampening Machines,

Dyeing Machines for Chain Warps.

BUILDERS OF ALL KINDS OF

MACHINERY

FOR

BLEACHING

DYEING

DRYING

AND

FINISHING

Calenders for Rolling, Glazing, Chasing and Embossing, also Calenders for Moire Finish.

Patent Combination Rolls made of Cotton and Husk especially adapted for Soft Finish, Unequalled for Elasticity and Durability.

Cotton, Paper, Husk, Chilled Iron, Brass and Rubber Rolls, Electro-deposited Copper Rolls for all Purposes.

Padding and Drying Machines for Shade Cloths.

Single and Double Cylinder Engines.

Hydraulic Presses and Pumps.

ALL KINDS OF OUTFITS FOR BLEACHING THREAD AND SOFT TWISTED YARN.
BLEACHING MACHINERY FOR YARNS IN THE WARP OR CHAIN.

Estimates, drawings and full particulars of complete plants furnished on application

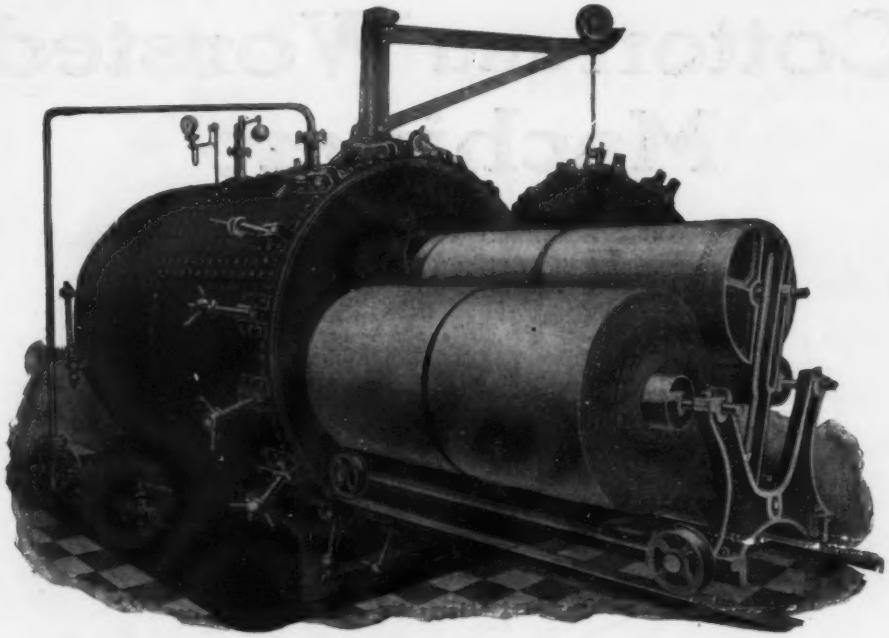
Southern Agent, STUART W. CRAMER, Trust Bldg., Charlotte, N. C., Equitable Bldg., Atlanta, Ga.

Open Bleaching System

OF

JACKSON & HUNT

Patented in the United States, Great Britain and the Continent
U. S. Patent, January 15th, 1901. No. 666,056



H. W. Butterworth & Sons Co.

Manufacturers of

Bleaching, Dyeing, Drying and Finishing Machinery

YORK AND CEDAR STREETS

PHILADELPHIA

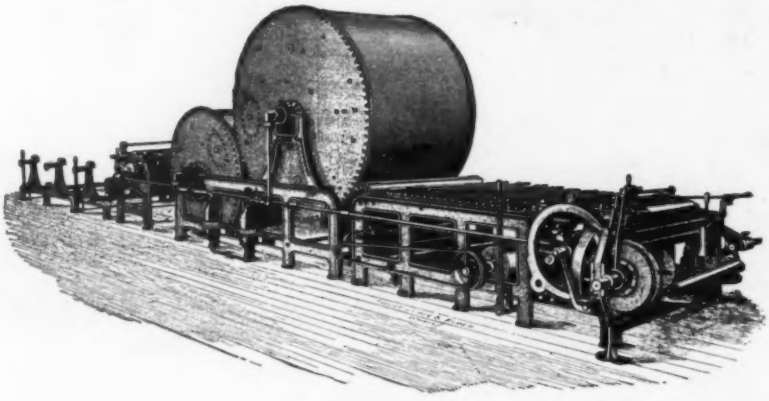
Sole Makers for the United States

Lowell Machine Shop

LOWELL, MASS.

Cotton and Worsted Machinery

With modifications to suit any class of work.



CYLINDER SLASHER.

COTTON MACHINERY—Cards, Railway Heads, Drawing Frames, Roving Frames, Ring Frames, Spoolers. Warpers, Slashers, Looms, Twisters, Reels, Shearing Machines, Brushing Machines, Folders, Cloth Stamping Machines, Baling Presses, Size Kettles, etc.

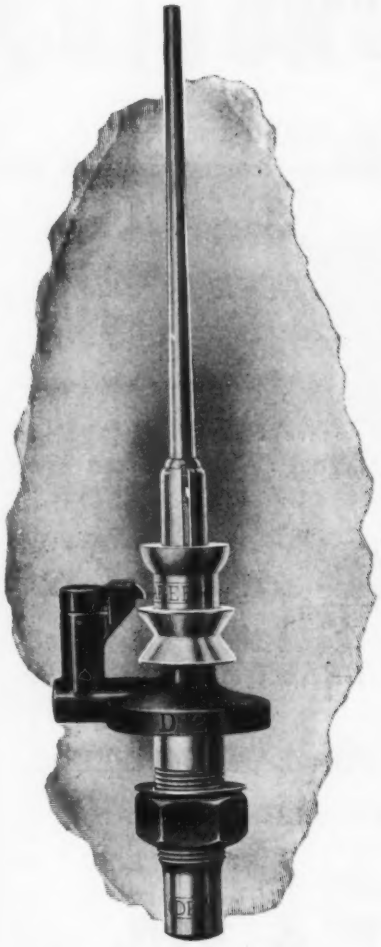
WORSTED MACHINERY—Spinning Frames, Twisters, Dandy Rovers and Reducers, Gill Boxes, etc.

Plans, Specifications and Estimates furnished upon application.

SOUTHERN REPRESENTATIVE

John Hill, Prudential Bldg., Atlanta, Ga.

A New Spindle Improvement



The Rabbeth Centrifugal Bobbin Clutch.

Fits the Bobbin loosely when at rest—allows considerable variation in fit.

Bobbins will all go down into place and Traverse can be lengthened.

Allows easier and quicker doffing — stronger bobbins — less reaming.

Draper Company, Hopedale, Mass.

We Also Build Looms.

HARWOOD'S MACHINERY

Increases Production,
Improves Quality,
Decreases Labor Cost.

THE BRAMWELL FEEDER (over 12,000 now in use.)
For Woolen, Worsted, Shoddy and Hosiery CARDS and GARNETT Machines.

THE APPERLY FEEDER (over 15,000 in use.)
For Second Breaker and Finisher CARDS.

THE BRAMWELL PICKER FEEDERS (two styles.)
For Burr and Mixing Pickers, also Fearnaughts.

THE NEW 1902 BRAMWELL OPENER AND FEEDER,
A Complete Machine. For Wool Washers and Wool Dryers.

SOLE AGENTS FOR THE SPENCER AUTOMATIC STOCK OILER,
Send for Sheet of Testimonials. Saves Oil, Labor and Waste.

A NEW CLUTCH ATTACHMENT FOR BRAMWELL FEEDERS,
Positive and Durable.

A FULL LINE OF PINS AND PARTS FOR LAMAIRE FEEDS.

IMPROVED APRONS AND REPAIRS OF ALL KINDS.

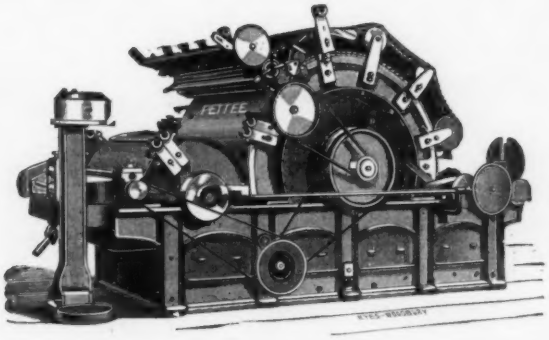
GEO. S. HARWOOD & SON,
53 State Street, Room 703,
BOSTON, MASS.

Long Distance Telephone, 3212 (Main) Boston.

Saco and Pettee Machine Shops

NEWTON UPPER FALLS, MASS., U. S. A.

COTTON MACHINERY



PICKERS,
REVOLVING FLAT CARDS,
DRAWING FRAMES,
RAILWAY HEADS,

SLUBBING,
INTERMEDIATE AND ROVING FRAMES,
SPINNING FRAMES,

SPOOLERS AND REELS.

Shops: { **Biddeford, Me.**
Newton Upper Falls, Mass.

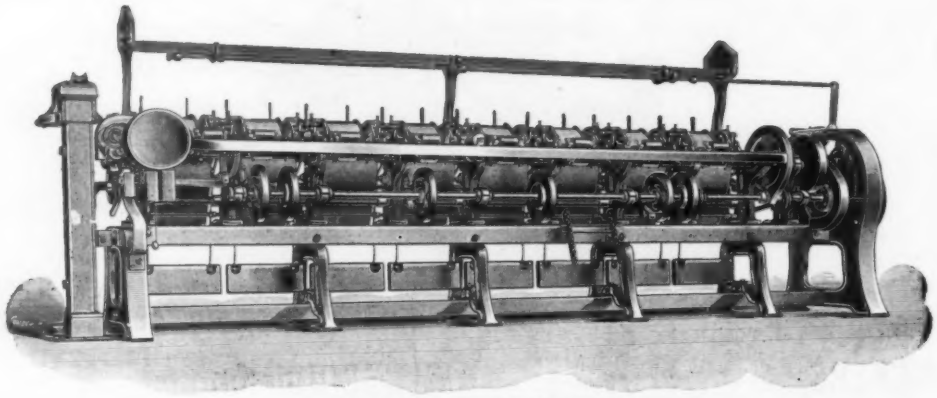
Southern Agent, A. H. WASHBURN, Charlotte, N. C.

THE

WHITIN MACHINE WORKS,

Cotton Machinery

WHITINSVILLE, MASS.



The Whitin 8 Head Comber.

Southern Agent, . . . S. W. CRAMER

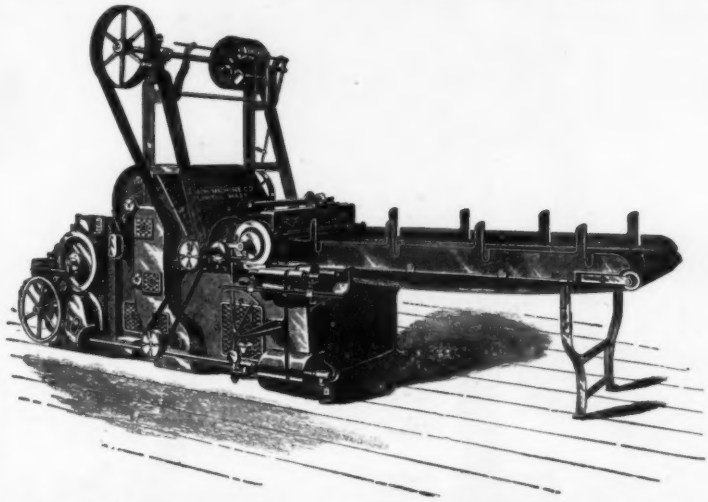
Trust Building, CHARLOTTE, N. C.
and Equitable Bldg, ATLANTA, GA.

Revolving Flat Carding Engines,
Sliver Lap Machines,
Ribbon Lap Machines,
Combers,
Railway Heads,
Drawing Frames,

Spinning Frames,
Spoolers,
Twisters,
Reels,
Looms,
Long Chain Quilling Machines.

The Best Pickers

In the Cotton Field nothing equals the DARKY COTTON PICKERS.



In the Cotton Mill nothing equals the KITSON COTTON PICKERS.

KITSON MACHINE CO., LOWELL, MASS.

LARGEST BUILDERS OF COTTON OPENERS AND LAPPERS IN THE WORLD.

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SCOTT & WILLIAMS

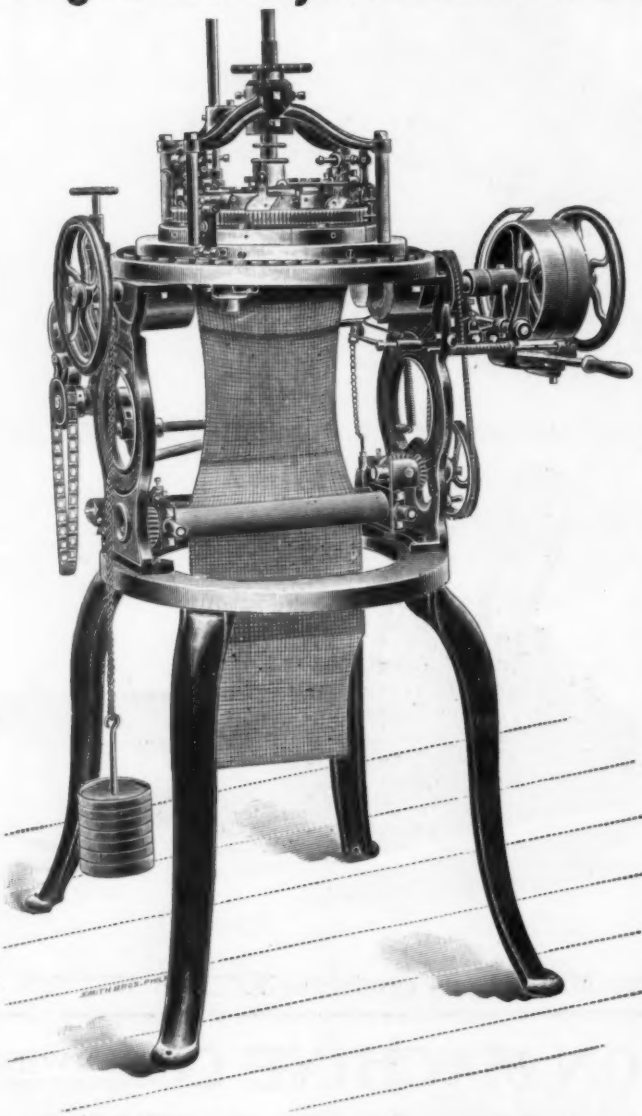
BUILDERS OF

Rib Knitting Machinery for Underwear and Hosiery

The illustration shows our

Improved High Speed Single Lever Automatic Ribbed Underwear Machine

for making ladies' and gents' ribbed underwear, union suits, etc., plain and shaped.



Plain, Single Lever or with Welt, Slack Course and Automatic Slackening Device for Welt.

Improved Measuring Device, by actual length knit.

Sizes, 8 to 24 inches, inclusive, varying by one inch.

Number of Feeds, four to 12, according to style and diameter of machine.

Solid Forged Steel Cylinders, specially hardened or with patent inserted walls for fine fabric.

Special Machinery for Sweaters etc.

We build Loopers, Ribbers and other Machinery for Knitting Mills

As well as

A Complete Line of Full Antomatic and 7-8 Automatic Seamless Hosiery Machinery.

Full Particulars, Samples and Special Catalogues on Application.

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BRANSON MACHINE CO.

BUILDERS OF

KNITTING MACHINERY

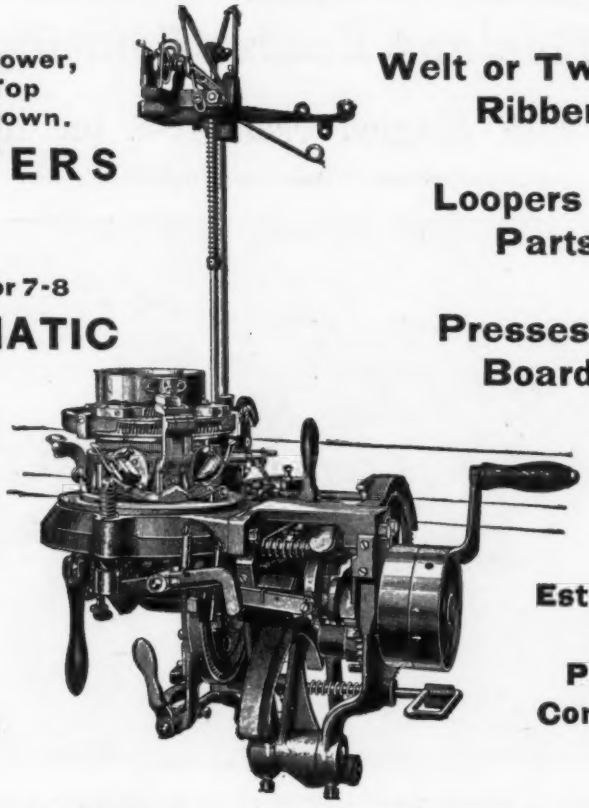
Hand or Power, Open Top or Hold Down.

KNITTERS

1-2, 3-4 or 7-8

AUTOMATIC KNIT-TERS

All Sizes and All Gauges.



Welt or Two-Feed Ribbers.

Loopers and Parts.

Presses and Boards.

Estimates for Plants Complete.

Winders and Bobbins. Hand Forged Steel Cylinders.

BRANSON MACHINE CO.

504 North American Street, : : Philadelphia, Pa.

Write for Information and Catalogue.

Hetheringtons

Are THE SOLE MAKERS of

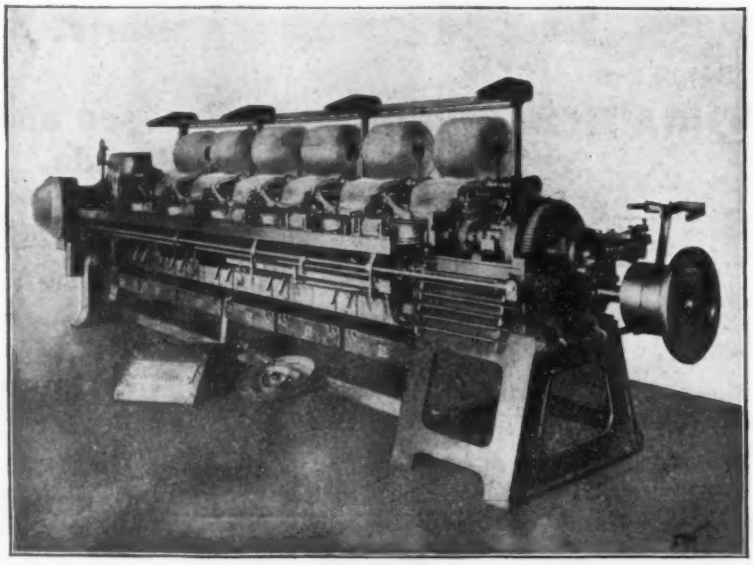
THE NASMITH COMBER

FOR

Fine and Coarse Combing.

Deals with Staples from 7-8 in. to 2 in.

350 Combers now in Operation, 75 more on order.



MAKES A PERFECT PIECING ON SHORT STOCK.

Produces from 100 to 180 lbs. in ten hours according to quality required. Only one cam in the whole machine; all other motions are continuous.

Descriptive pamphlets and and all particulars, including arrangements for seeing machine in operation, from

STEPHEN C. LOWE, 186 Devonshire St., Boston.

Sole Agent for United States and Canada for
JOHN HETHERINGTON & SONS, Ltd., Manchester, England.

EVAN ARTHUR LEIGH

232 Summer Street (opposite the South Station), Boston, Mass.

SOLE AGENT IN THE UNITED STATES AND CANADA FOR

Platt Bros. & Co., Ltd.

BY FAR THE LARGEST MAKERS IN THE WORLD OF

Cotton, Woolen and Worsted Machinery

Platt Bros. & Co. are exhibiting in the Varied Industries Building. Louisiana Purchase Exhibition, St. Louis, Mo., the most complete line of Cotton Machinery that has yet been exhibited, for spinning from coarse counts up to 300's.

MATHER & PLATT, LTD.

Dyeing and Finishing Machinery. Archbutt-Deeley System for purifying and softening water.

TEXTILE MACHINERY ASSOCIATION, LTD.

Flax, Hemp and Jute Machinery.

THE PATENT AUTOMATIC FEEDING MACH. CO., LTD.

Patent Feeding Machines for wool, cotton, flax, fur and fibrous material.

GEORGE HODGSON, LTD.

Looms for Worsteds, etc.

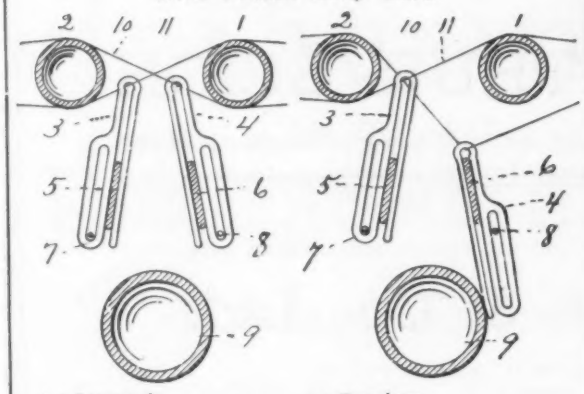
JOSEPH SYKES BROS., Card Clothing for Cotton.

JAMES CRITCHLEY & SON'S, Card Clothing for Woolen and Worsted.

DRONSFIELD BROS'. Grinding Machinery and Emery Filleting.
The best French and English Combing and Rubbing Aprons.
Harding's Pins and Circles, Varey's Fallers, etc.

THE "C. & G." IMPROVED STOP-MOTION AND METHOD OF APPLYING TO WARP.

With Patent Drop Bars.



1, 2, Lease rods.
5, 6, Upper circuit guide-rods.
9, Lower circuit bar.
3, 4, Drop-bars
7, 8, Retaining rods.
10, 11, Warp threads.

The above cut shows the stop-motion with drop-bars in normal position before break in warp thread, the electric circuit from the upper circuit guide-rods to the lower circuit bar "9" not being completed.

The above cut shows stop-motion after a break in warp thread "10," the drop-bar "4" having fallen and completed the electric circuit from the upper circuit guide-rod "6" to the lower circuit bar "9," thereby stopping the loom.

THE COLDWELL-GILDARD

Warp-Stop Motion

FOR LOOMS

(Broadly covered by Patents Issued and Pending)

Many thousands placed in successful operation during the past four years on coarse, medium and fine cottons, velvets, plushes, ginghams and alpacas in leading mills

EFFICIENCY — SIMPLICITY— DURABILITY — ECONOMY

Widest in Range of Use. Lowest in Cost of Maintenance

Decreased Weaving Cost; Improved Quality of Product; A "Universal" Stop-Motion

Samples and copy of our Illustrated Catalog sent on application

THE COLDWELL-GILDARD CO., 108-110 Hartwell St., - FALL RIVER, MASS.

HENDERSON'S

Double Carding Process for Wool

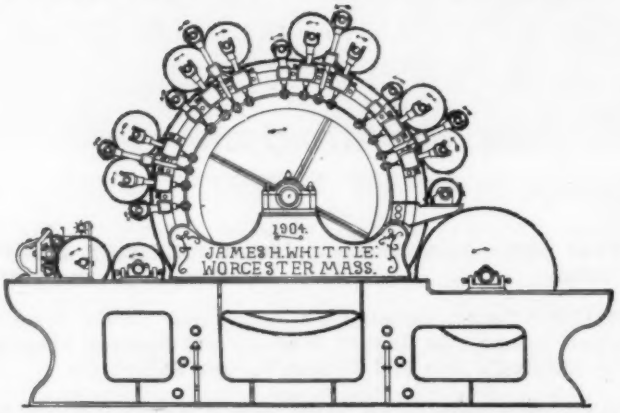
(Patented May 10, 1904)

Is a Great Success.

Manufactured By **JAMES H. WHITTLE,** 150 Harlow St., Worcester, Mass.

INCREASES PRODUCTION AND QUALITY

SAVES LABOR



SAVES ROOM

APPLIED TO EITHER OLD CARDS OR NEW

WOOL AND WORSTED MACHINERY

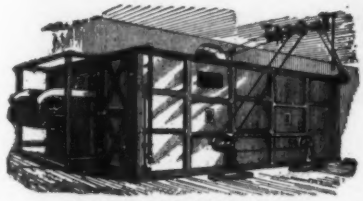
Including Carding Machinery for Wool and Worsted, Yarn Twisters, with or without Novelty Attachments, Yarn Dressers, Reels, Beamers, Single or Double. Yarn Spoolers, Dresser Creels, Cloth Dryers, of all widths, New Rotating Skein Dryers, Four and Eight Drum Spoolers, Improved Hydro Extractors, Improved Dusters with Fan, New Pattern Mixing Picker, Skein Drying Reels, etc.

"HURRICANE" DRYERS AND FANS

For WOOL, COTTON STOCK, YARN, STOCKINGS, UNDERWEAR, Etc.

Write for Booklets.

Truck Yarn Dryer.



Cotton Stock and Wool Dryer.

CARBONIZING,

BLEACHING,

"Hurricane" Fan, Style No. 2.

OXIDIZING, CHROMING and WASHING MACHINERY.

PHILADELPHIA DRYING MACHINERY CO.

6721 Germantown Ave., Philadelphia, Pa.

HOUGHTON'S ALL STEEL THREAD BOARD

with Hardened Thread Guides.

PRICE.

Steel Thread Boards, 7½ c. per Sp.
Brass " " 15 c. "
(f.o.b. Worcester.)

Add 3 c. each for Metal Rail.

PATENTED.

Nov. 30, 1897. Nov. 9, 1901.
Mar. 8, 1898. June 9, 1903.
July 1, 1901. Mar. 1, 1904.
May 10, 1904.
and other patents pending.

Any infringements of the above Patents will pe prosecuted.

(Our Latest Model Hinge and Steel Rail.)

The only Thread Board that ***holds a guide solid*** all the time; ***never*** gets loose; is always in perfect adjustment, and thus must make a saving in travelers, broken ends, waste, thread guide, care and also prolong the wear of rings and increase the production per spindle. These claims are based on the truth of mechanical principles, and have been proven true by actual use in many mills whose superintendents will substantiate these claims. **Write for list of mills using our Thread Boards.**

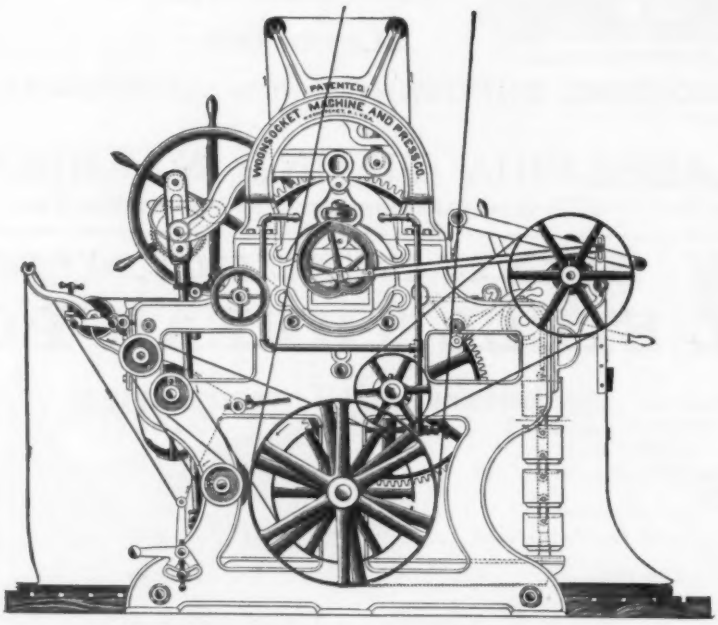
L. T. HOUGHTON, Sole Manufacturer, WORCESTER, MASS.

Best Patent Steam Rotary Cloth Press

Four Separate Pressings In One Machine!

The Only Press that has Self-Yielding Beds with Four Points of Contact

PERFECT TEMPERATURE, POWERFUL, SIMPLE

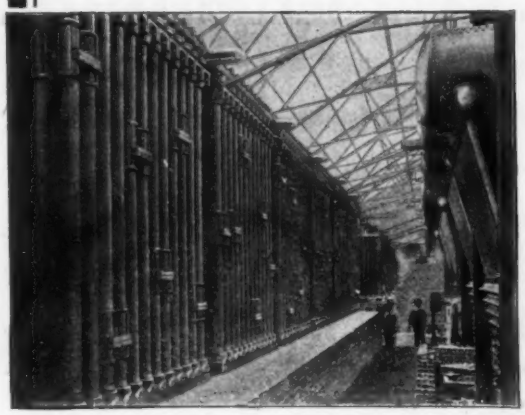


THE WOONSOCKET ROTARY PRESS.

Woonsocket Machine and Press Company

WOONSOCKET, R. I,

GREEN'S ECONOMIZER



has demonstrated a Saving in

Textile Mills, Bleacheries, Dye Works,

that has not been duplicated by any other machine invented in recent years.

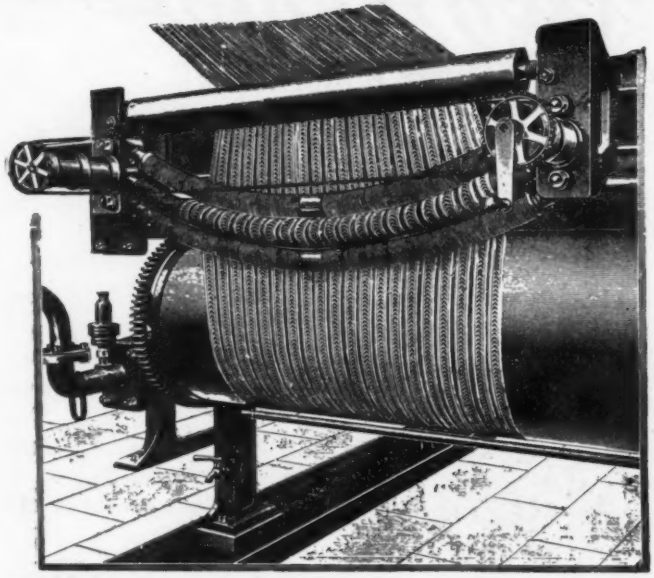
Saving in coal,
Increased steaming capacity,
Saving in labor in handling coal and ash,
10 to 15 %

These are only a few of the things we accomplish.

Send for Catalog.

The Green Fuel Economizer Co.,
Matteawan, N. Y.

A PERFECT CLOTH EXPANDER



The recent invention of Wm. Mycock, an English cotton manufacturer. Hundreds sold in Great Britian and on the Continent. Large bleacheries in this country where it has been placed on trial are delighted with it. Gets the full width of goods, with perfectly even tension both ways. Can be attached to calenders or cans. Put it on trial.

Patented in United States, Canada, Great Britain and Continental countries. Infringements will be prosecuted.

THOMAS LEYLAND & CO., 53 INDIA ST., BOSTON.
Sole Agents for the United States and Canada.

NOT ONLY
THE LATEST
BUT ALSO THE
SIMPLEST and BEST.

THE CAMLESS WINDER.

For Cones and Tubes.

Send for Descriptive Circular.

The A. T. ATHERTON MACHINE CO.

PAWTUCKET, R. I.

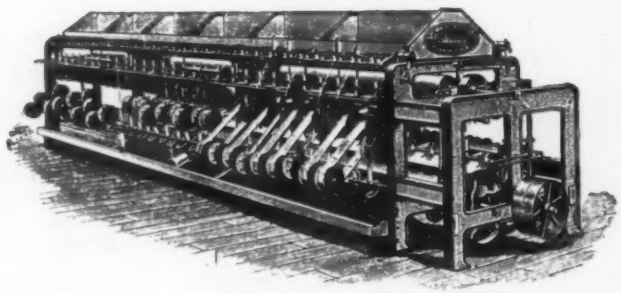
Telegraphic Address: "WHITELEY, HUDDERSFIELD." Nat. Telephone, 598 and 599.

Wm Whiteley & Sons Ltd.

LOCKWOOD, HUDDERSFIELD.

MANUFACTURERS OF

Woolen Machinery



CONE PIRN WINDER.

Makers of all descriptions of

Tentering and Drying Machines.

Moore & Whiteley's Patent Wool and Cotton Dryer.

Crabbing or Winding-on Frames.

Cross Raising Machines, Wool Scouring Machines.

Hydro Extractors. Warp Sizing.

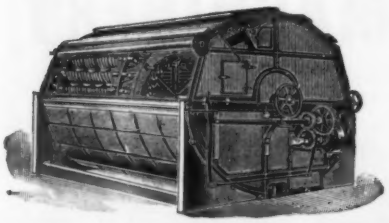
Cool Air Drying and Beaming Machines.

Warping Mills with Patent Sectional Dividing Apparatus.

Self-Acting Mules. Bobbin or Pirn Winder, &c., &c.

Mercerizing Machinery.

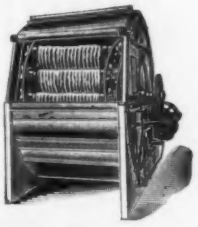
SKEIN AND SLUBBING MACHINES



SAVES

75% in Labor.
30% in Winding.
Steam and Dye Stuffs.
No Friction.
No Tangling.

CAPACITY
50 to 700 lbs per batch.



THE KLAUDER-WELDON DYEING MACHINE CO.

AMSTERDAM, N. Y.

Builders of Machines

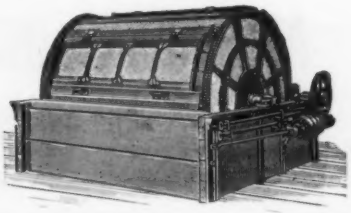
For Skein—Worsted, Slubbing, Cotton and Silk.
" " and Warp Mercerizing.
" Raw Stock Cotton, Wool, Waste and Rags.
" Garments Underwear, Hosiery and Caps
" Sulphur Colors—Raw Stock, Skein and Hosiery.

RAW WOOL AND COTTON MACHINES.

CAPACITY
200 to 1000 lbs per batch.

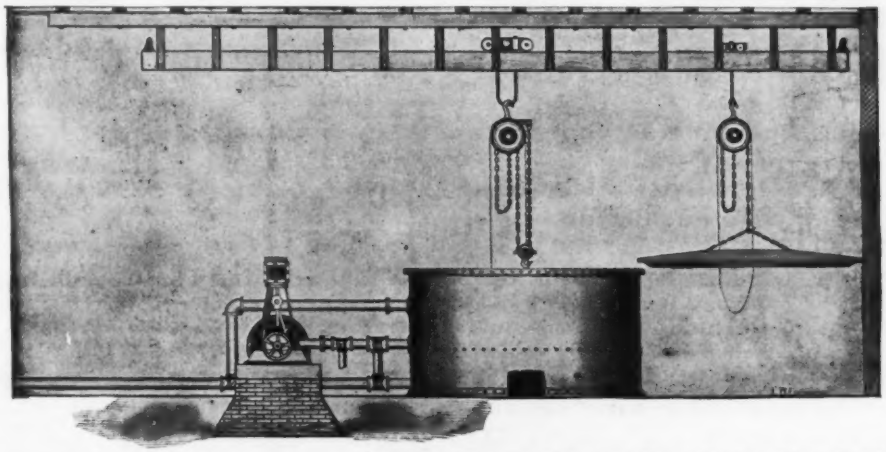
SAVES

50% in Labor besides Steam and Dye Stuffs. Practically indestructible. Leaves stock in perfect condition.



VACUUM DYEING MACHINE CO., CHATTANOOGA, TENN.

RAW STOCK, YARN AND HOSIERY DYEING MACHINES



OFFICE OF TREMONT & SUFFOLK MILLS, LOWELL, MASS., Jan. 14, 1904.

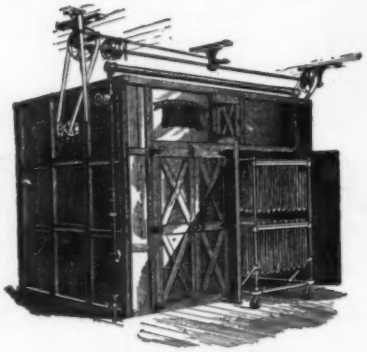
VACUUM DYEING MACHINE CO., Chattanooga, Tenn.

GENTLEMEN: Repiying to your inquiry in regard to what we think of your Raw Stock Dyeing Machine, would state that we have been using one about six months, with very satisfactory results, the dyeing being level, and the stock left in first-class condition for spinning. Can give your machine no better recommendation than to say, we think so well of it that we have just placed an order for two additional machines.

Yours truly J. J. CONNELL, Agent.

"20th CENTURY" MACHINERY

DRYERS
for
WOOL,
COTTON STOCK,
YARN, STOCKINGS,
UNDERWEAR.
VENTILATING FANS.
MACHINERY
for
CARBONIZING
and
YARN SCOURING.



TRUCK YARN DRYER.

CLOTH WASHERS
and
CLOTH DYEING MACHINES, BLEACHING MACHINERY FOR KNIT GOODS, ETC.
CONTINUOUS SYSTEM FOR BLEACHING COTTON STOCK.
TOM-TOMS,
CHROMING, WASHING
and
OXIDIZING MACHINES.

AMERICAN DRYING MACHINERY COMPANY,

19th AND WESTMORLAND STS., PHILADELPHIA, PA.

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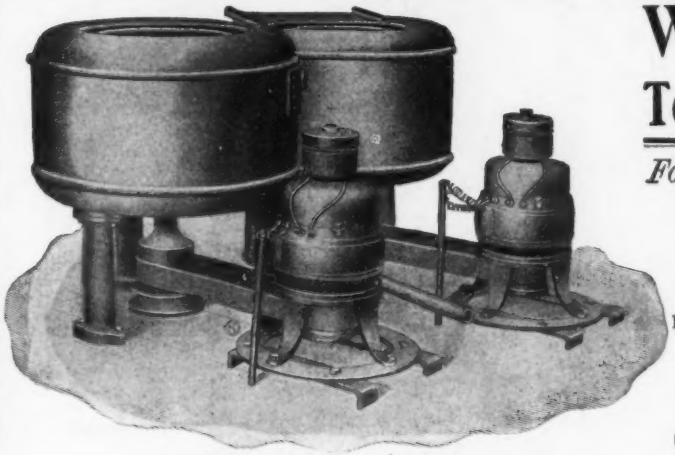

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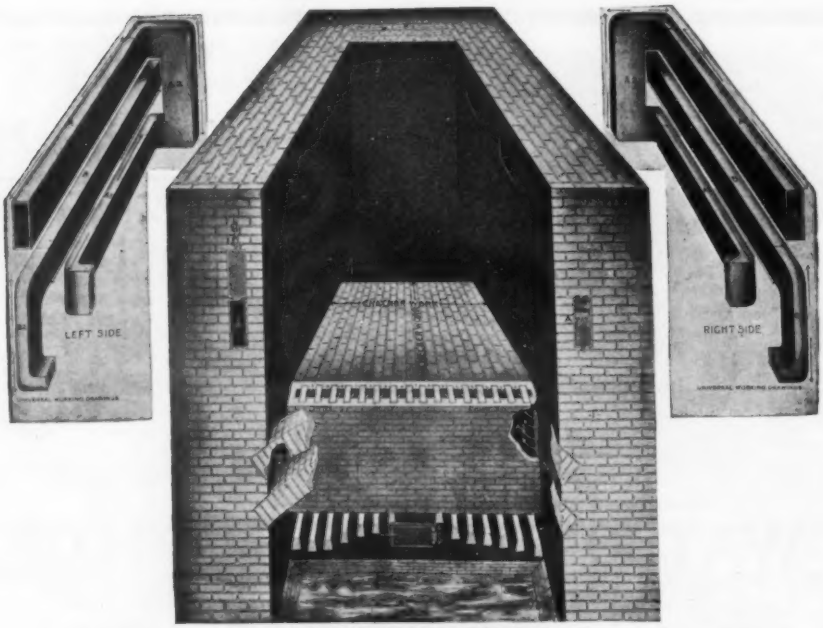

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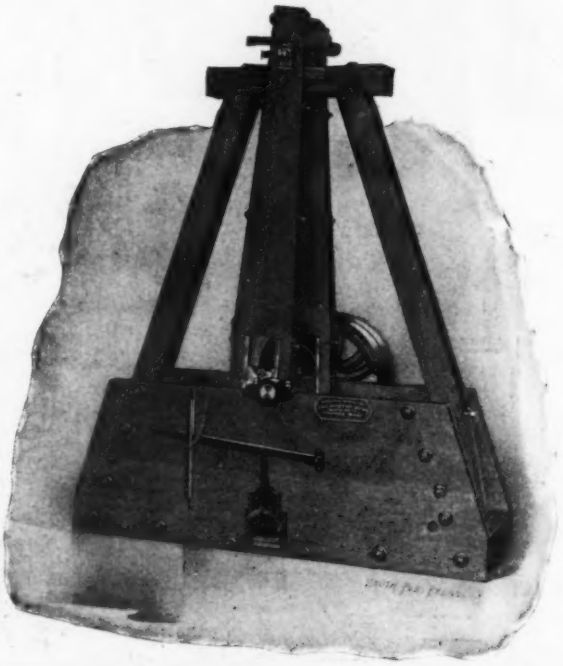

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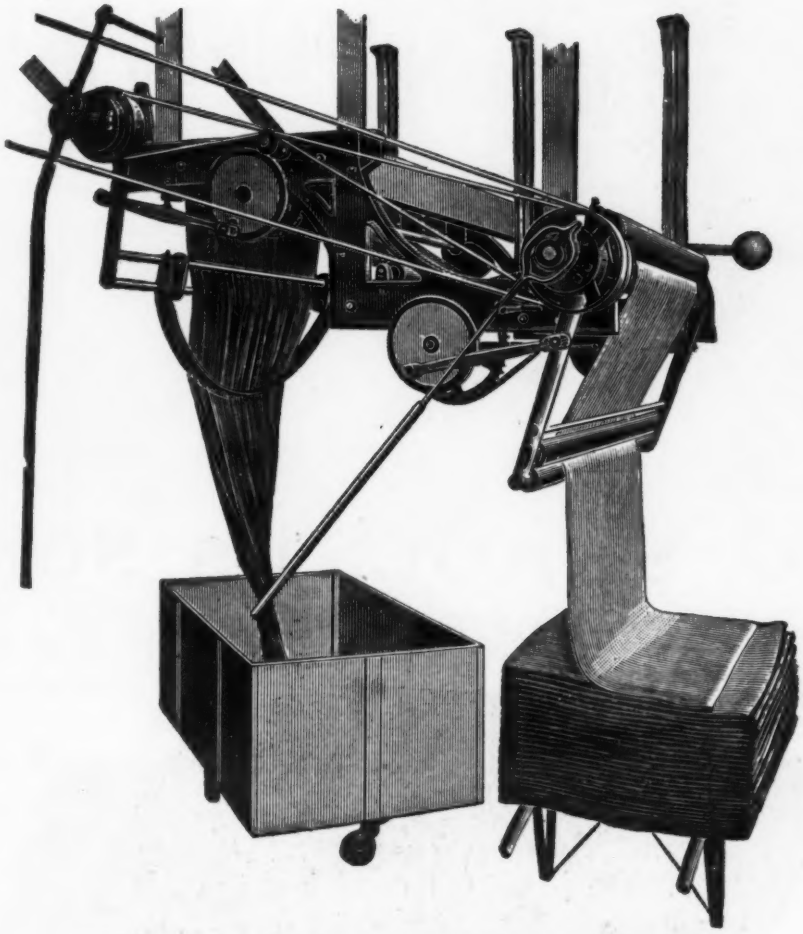

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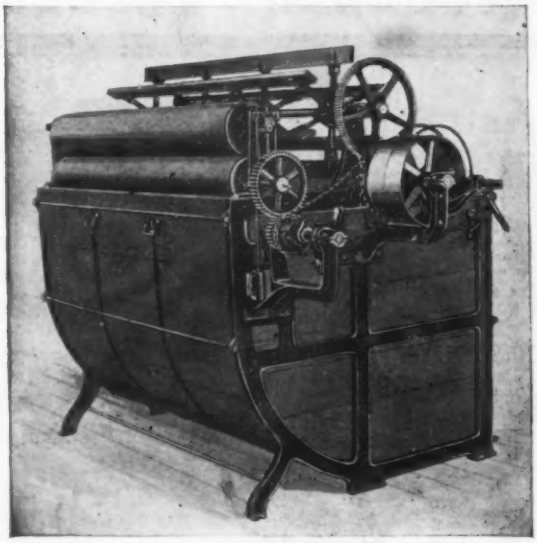

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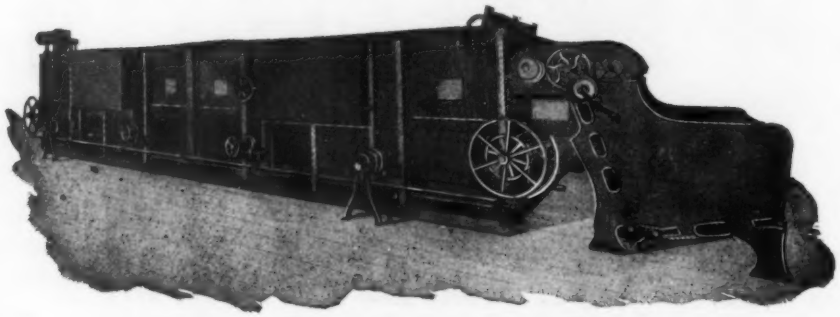

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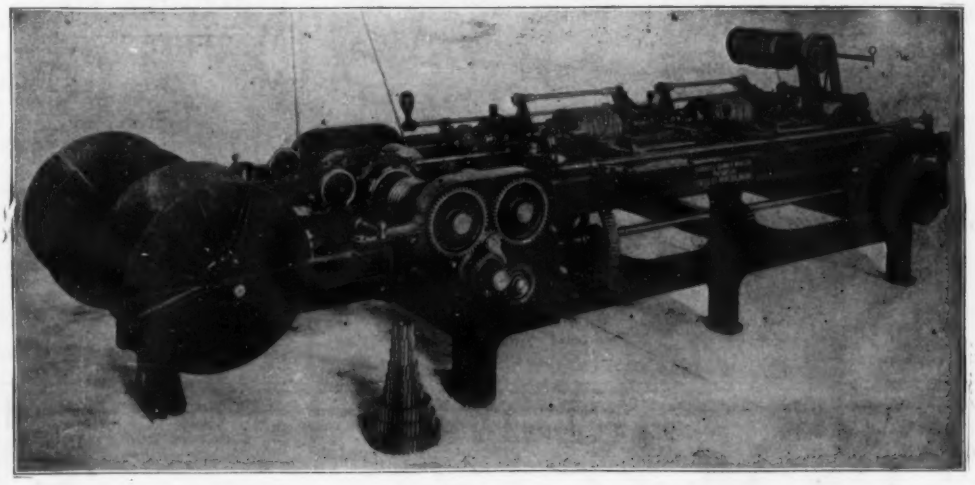

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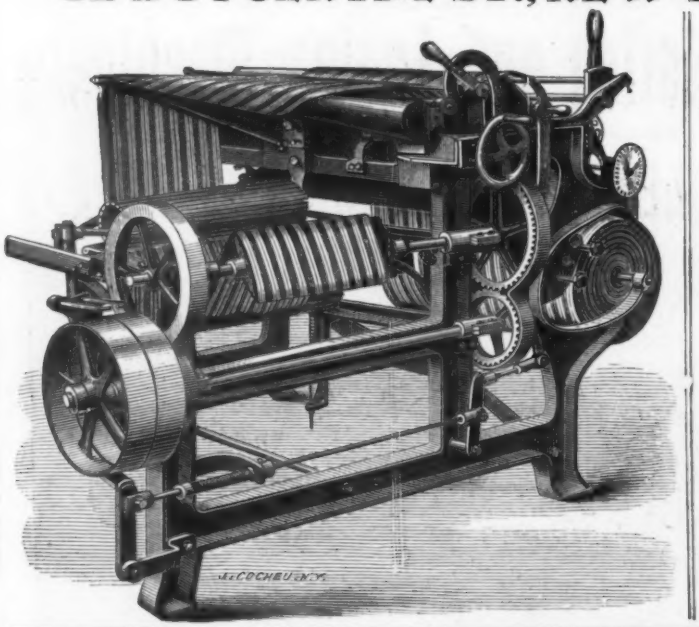

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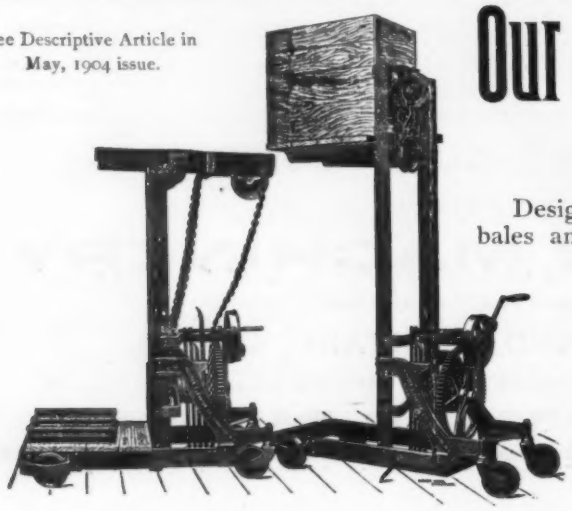

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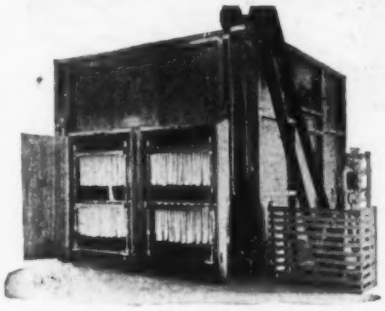

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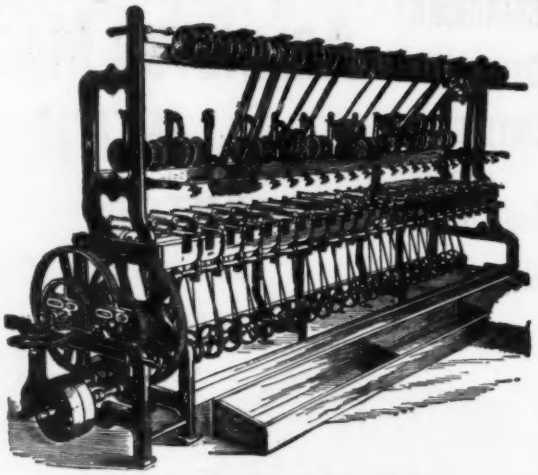
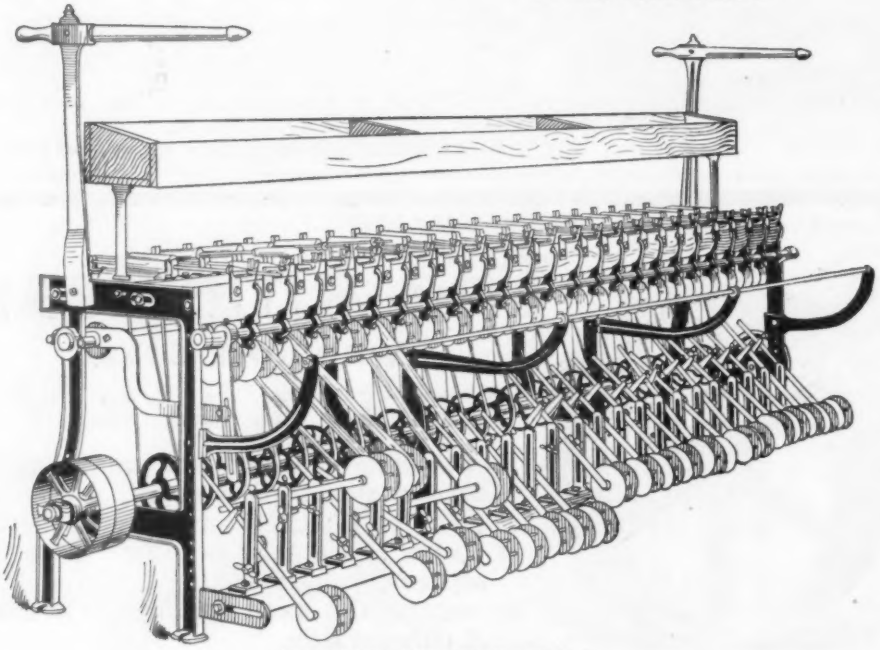


Patent Shuttle Bobbin Winder for Skeins, with Patent Variable Motion.



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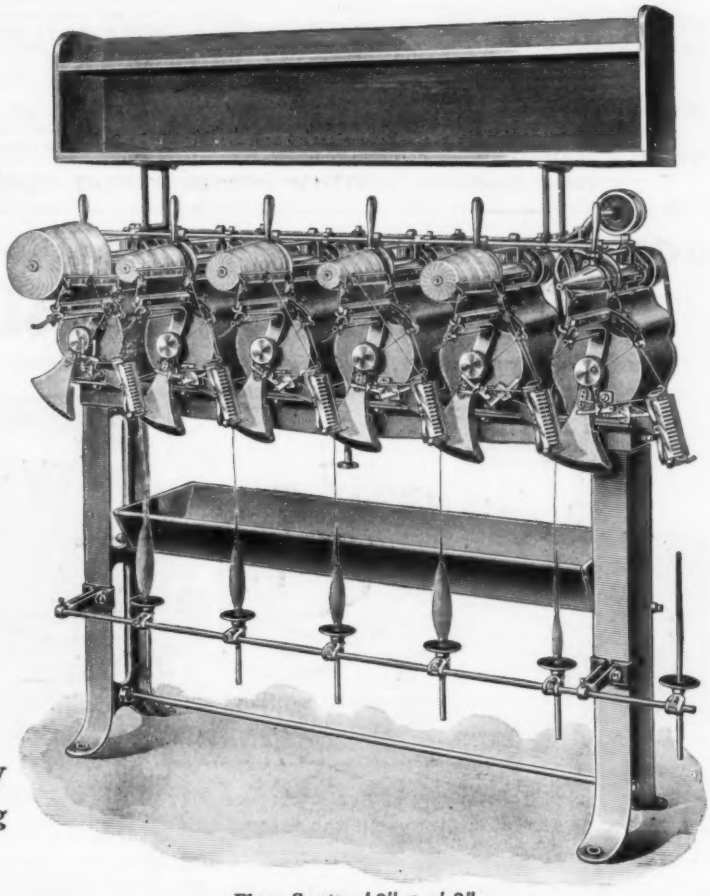

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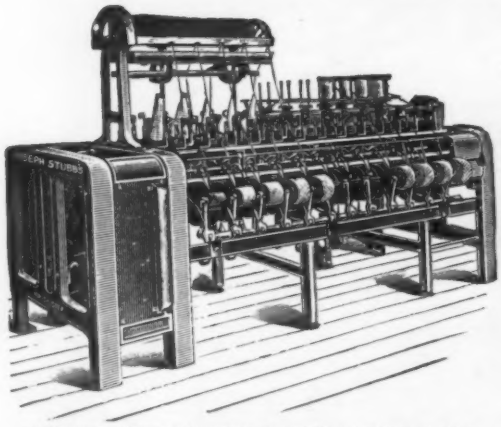
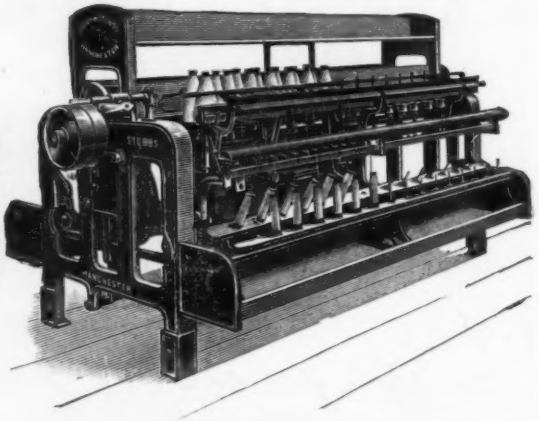


PATENT QUICK TRAVERSE COTTON GASSING FRAME.



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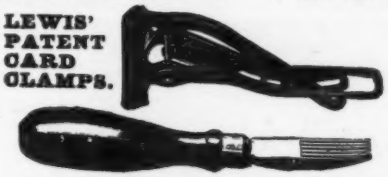

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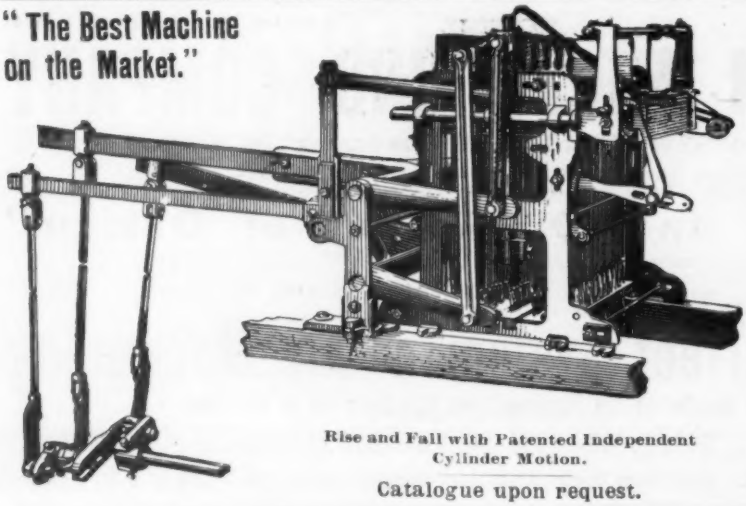

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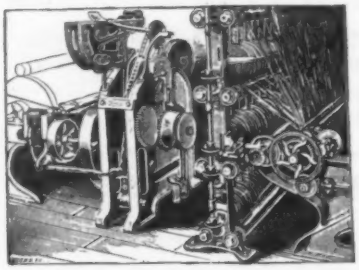

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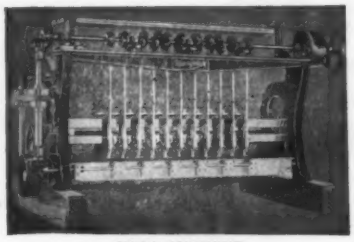

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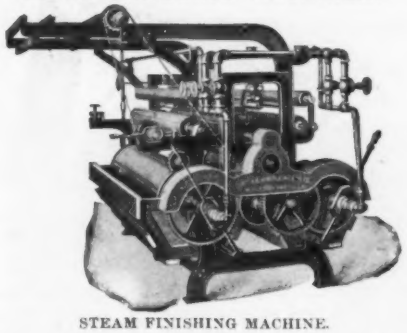

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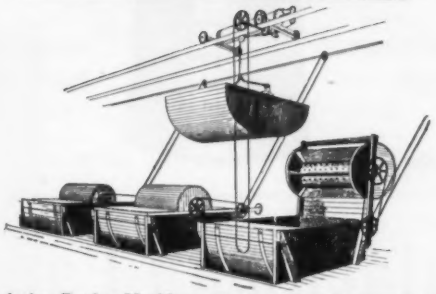
2503-9 CORAL ST., PHILA., PA.

Dyeing Machinery

FOR WARPS AND PIECE GOODS

Bleaching Machines



Circulating Dyeing Machines. For Hosiery, Underwear, Raw Stock and Rags. Singeing Machines for Hosiery. Mercerizing Machines.

CIRCLES, HACKELS, GILLS, FALLERS and PORCUPINES.
CIRCLE KNIVES TO ANY PATTERN.

R. H. HOOD,

Manufacturer of

MACHINE WOOL COMBS

. Dealer in

The Best English and American

CAST-STEEL PINS.

1842-44-46 GERMANTOWN AVENUE,

Long Distance Telephone. Philadelphia, Penn.

WILLIAM SCHOFIELD CO.

Krams Ave., formerly Church St., Manayunk, Phila., Pa.

IRON FOUNDERS

AND TEXTILE MACHINERY BUILDERS

Makers of Rag, Wool, Hair and Finishing Pickers, Automatic Square and Cone Willows, "Schofield" Intermediate Feed for Cards, Rag and Extract Dusters, Waste Pullers, Worsted and Shoddy Reels, All Kinds of Spike and Slat Aprons.

Special Machinery Built General Machinery Repairs

Relagging Picker Cylinders a Specialty

BARNEY COMPOUND FANS

Are Used by the Leading Mills, Factories, Public Buildings and Institutions.

FACE VIEW.

They insure perfect ventilation; ample circulation of pure, live air loaded with the health giving oxygen, and remove dust, odors, smoke, gases, moisture, etc., thus assuring hygienic conditions.

And That's a Direct Source of Economy.

Healthy conditions insure healthy workers; healthy workers produce the most, the best work.

Tell us what you want and we'll tell you what we'll do. Free !

BARNEY VENTILATING FAN WORKS,

ALBERT B. FRANKLIN, Proprietor. 165-7 FORT HILL SQUARE, BOSTON, MASS.

THE CYPRESS LUMBER CO.

TWO BIG FACTORIES.

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Boston, Mass.

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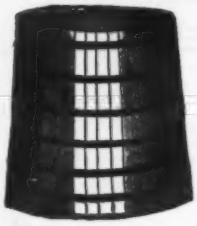

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CYRUS BORGNER CO.
SUCCESSORS TO CYRUS BORGNER
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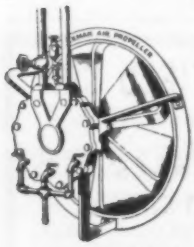
FIRE BRICK AND CLAY RETORTS

Blackman Fans

With Direct Connected Engines.



ECONOMICAL FIRST COST OPERATION

Can be run at any speed and any time. No long shafting and belts to waste power.

For Dye Rooms, Factories, Boiler Rooms, or where there is moisture or dust they are the best apparatus ever installed.

E. M. NICHOLS,

639 Arch St., - PHILADELPHIA, PA.

Write for particulars.

A. J. BECKLEY CO.

284 Pearl St., New York City.

Perforated Copper

For Wool Scouring, Renser Boxes, Dyeing of Raw Cotton. Duster Screens, Picker Screens.

PERFORATED SCREENS OF ALL KINDS.

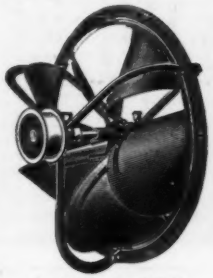
Factory, Carwood, New Jersey.

THE BERRY SYSTEM OF DRYING

Applied to Cloth, Wool, Cotton, Drying Rooms, Tables or Machines makes a guaranteed increase of 25 per cent.

We Improve CARBONIZERS Also.

This is the Berry Wheel, the most efficient agent for moving air, eliminating steam and other impurities in the atmosphere.

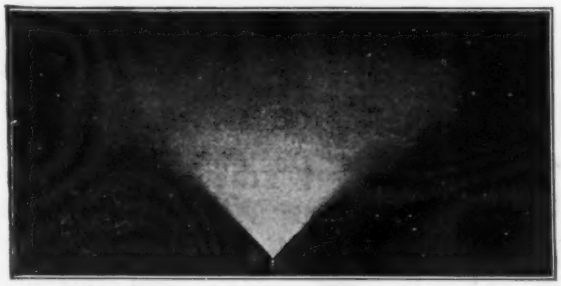


A. HUN BERRY,
23 West First Street,
BOSTON.

SCHUTTE & KOERTING CO.

Engineers and Machinists, 12th and Thompsons Sts., Phila., Pa.

Spray Nozzle emitting water in a fine spray or vapor.

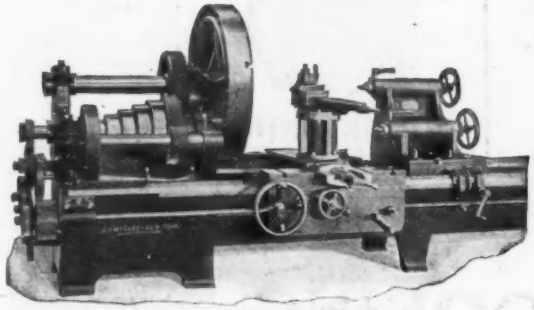


Complete Humidifying Plants

For Woolen Mills, Cotton Mills, Spinning Mills, Silk Mills, etc.

We also manufacture Injectors, Blowers, Condensers, Syphons, High Class Valves, Sulphur Furnaces for Bleaching Purposes.

CORRESPONDENCE SOLICITED.



McCabe's "New Style" 26-48 inch "DOUBLE-SPINDLE" LATHE.

A "FORWARD" LATHE

McCabe's "Double-spindle" keeps "buttin' in" continually for every job of Lathe-work that comes into the shop—from the turning of big 48-in. jobs down to the handling of any small work, with plenty of power, and every up-to-date convenience for operating. If you've any knowledge of Lathes at all, you know by this time that there's nothing like a "Double" for Repair-shops, especially when a Lathe of this kind can be bought for half the price of the ordinary big machine. Catalog?

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Established 1870

John Heathcote & Son

Providence, R. I.

Builders of Improved

Cloth Tentering and Drying Machinery

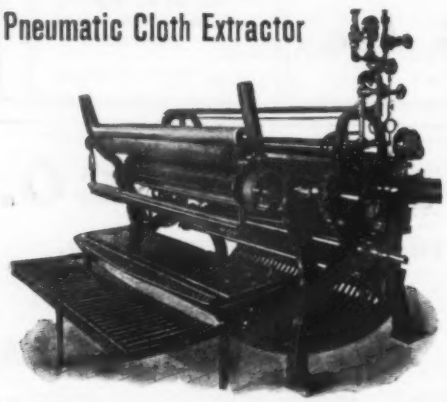
for WOOLENS, WORSTEDS, FELTS, etc.

Built Upright or Horizontal with Low Down Feed

Ventilating Fans a Specialty

Send for Catalogue

Pneumatic Cloth Extractor



Stiner's Pneumatic Extractor will extract goods in the open width. This machine will extract from 25 to 40 yards per minute and once through the machine does the work. I have one of my extractors now running over 30 yards per minute in one of the most progressive mills where only the best machinery can be used to manufacture their fine goods.

Stiner's Twentieth Century Dewing Machines are running in some of the best mills where foreign and domestic machines have failed to give satisfaction. If you are interested in sponging machines for wetting out goods in the open width to properly shrink them, I can build you a machine that will do this work.

If you are interested in the line of machinery which I build, please write for cut and further particulars. Address all correspondence to

FRANK STINER,

Lawrence, Mass., U. S. A.

Shop, Island St.

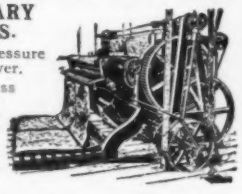
Inventor and Builder of the Best Finishing Machinery.

New and Second-Hand Cloth Presses

LATEST MILLER ROTARY STEAM CLOTH PRESS.

Patent Flexible Steel Bed. Pressure automatically appplied by power.

1 6/4 double bed second-hand press
1 8/4 " " " "
1 6/4 single " " "
at a bargain.



Miller Press & Machine Co.

WOONSOCKET, R. I.

E. FEARON & CO.

Engineers and Machinists,

110 OXFORD STREET, PHILADELPHIA.

Engines, Pumps, Boilers, and Electrical Machinery. | Textile Dyeing, Drying and Finishing Machinery.

Repairing and Jobbing Promptly Attended to.

Both 'Phones.

EUREKA FIRE HOSE

Is Acknowledged to be

THE BEST FIRE HOSE MADE

For use in

Cotton Mills, Woolen Mills and Factories.

Seamless Woven and Rubber lined EUREKA COTTON HOSE, "TROJAN" brand, has no equal. Send for circular and Testimonials.

Awarded Gold Medal at the St. Louis Exposition, 1904.

(Trade Mark)

EUREKA FIRE HOSE CO.,

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TEXTILE MANUFACTURERS ARE INVITED

To ask about our new brand of

Undoubtedly Standard.

U. S. ROOFING

Unquestionable Superiority.

THE LINCOLN WATERPROOF CLOTH CO., Bound Brook, N. J.

DINSMORE

Mill Sewing Machines

No. 9—Portable Foot-Power Rotary Sewing Machine.

It is especially adapted for use in Cotton and Woollen Mills, Bleacheries, Print Works at the Printing Machines, in Dye Works, Cloth Rooms, at the Fulling Mill, Shears, Calendars, Gigs, Drying Machines, etc., or any of the different finishing processes in textile mills.

Manufactured by the

DINSMORE MANUFACTURING CO.,

Salem, Mass., U. S. A.

DOUBLE SHEAR

The Finest Shearing Machine in the World. Get into line. Use Double Shears. We will take your Single Shears in trade. Our representative can interest you. He will call at a word from you.

Parks & Woolson Machine Co. Springfield, Vermont.

NORTH CHELMSFORD MACH. CO.

SUCCESSORS TO SILVER & GAY CO.

Manufacturers of

Automatic BALL WINDERS, adapted to all kinds of Twines, Silks and Floss. QUILLERS and REELS. Also SPECIAL MACHINERY from DRAWINGS or PATTERNS.

Repairing, Turning and Refluting Worsted. Spinning and Drawing Rolls a Specialty.

NORTH CHELMSFORD, MASS.

LOWELL CRAYONS FOR MILL USE.

Quality To Meet All Requirements.

Address for Samples and Prices,

LOWELL CRAYON CO., Lowell, Mass.

Original Makers.

Established 1844.

BENJ. BUCKLEY'S SON,

(WM. J. BUCKLEY) **Gun Mill, Patterson, N. J.**

Manufacturer of all kinds of SPINDLES, FLYERS, RINGS, TUBES, CAPS, etc., for Cotton, Silk, Flax, Woolen and Worsted Machinery.

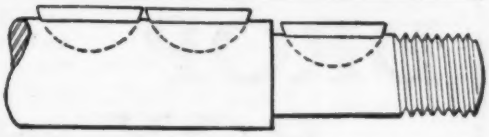
Roving Spindles and Flyers a Specialty. Light Forgings.

REPAIRING OF ALL KINDS.

Key Seating Attachment

FOR

Whiton Gear Cutter



We offer an attachment for use with our Gear Cutting Machine, to cut key seats for the Woodruff System of Keying. Write for description, circulars and price.

THE D. E. WHITON MACHINE CO.,

19 Oak Street, New London, Conn.

ANYTHING in Mill Supplies.

Entire Outfits for New Mills, or small and odd items that that you don't know just where to obtain, can be found at the

AMERICAN SUPPLY CO.,
PROVIDENCE, R. I.

E. L. TEBBETS & CO.,
Locke's Mills, Me.

Thread and Silk **SPOOLS** of any description.

We are located in the best white birch region. Our work and prices seem to satisfy the most particular customers. We can give any finish desired. Estimates furnished on samples submitted.

The Best That Money Can Buy

SPINNING RINGS.
TWISTER RINGS.
RING HOLDERS.
TRAVELER CUPS.
SILK RINGS.
TRAVELER CLEANERS.

Correspondence Solicited.

WHITINSVILLE SPINNING RING CO.,
WHITINSVILLE, MASS., U. S. A.

The J. L. N. Smythe Co.
Paper Dealers,

23-25 So. 4th St., Phila.

Fibre, Manilla, and Tissue

Leather Fibre S Manilla

ALL RAG and ALL LINEN } PRESS BOARDS

Colored Wrapping Paper

Write for full set of Samples.

J. K. SHRYOCK,

19 South 7th St.,
PHILA., PA.

MANUFACTURER OF

PERFECT RIGID CLOTH S BOARD TRADE MARK

Paper Cloth Boards For Textile Mills

All weights and sizes furnished by thousand, ton or carload. Prompt delivery assured. Samples and prices on request.

DROP BOX PICKERS

Our stock of finished Drop Box Pickers is so large and varied that a Picker must be very much out of the ordinary if we cannot furnish it promptly and *well seasoned*.

GARLAND MFG. CO., Saco, Me.

Formerly Loom Picker Co., Biddeford, Me.

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G TRADE MARK

E. DIXON. Established 1876. F. M. DIXON.

DIXON LUBRICATING SADDLE CO., Bristol, R. I.

SOLE MANUFACTURERS OF

Dixon's Patent Locking Saddles and Stirrups.

The weight can be taken off and put on to the middle rolls, without stopping your frames, when long staple cotton is used.

THE STIRRUP IS ALWAYS IN PLACE.
NO BENT STIRRUP RESTING ON ROLLS.

Manufacturers of all kinds of Saddles, Stirrups and Levers. Send for Samples and Prices.

Spinners' Supplies in general.

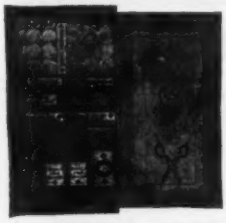
ELIJAH ASHWORTH,

—MANUFACTURER OF—

Card Clothing of Every Description

HENRY ASHWORTH, Agt. **FALL RIVER, MASS.**

Somebody Gets Hurt



Cut of No. 1

Nobody knows what to do or has anything to do with, until the doctor comes and every minute's delay counts against the injured.

THE STANDARD ACCIDENT CABINETS

Are designed for just such emergencies.

CONTENTS.

6 rolls linten bandages	.	2	in.	2 packages absorbent lint.
6 " " "	. .	2 1-2	"	2 " " cotton, 1-4 lb.
3 " cotton "	. .	1 1-2	"	1 12 oz. bottle carron oil.
3 " " "	. .	2	"	1 12 " " arnica.
3 " " "	. .	2 1-2	"	1 roll adhesive plaster.
3 " " "	. .	3	"	1 package iodoform gauze.
2 packages first aid for wounds.				1 pair scissors.
2 " linten gauze.				

These Cabinets contain only the highest grades of medicines and bandages which are thoroughly sterilized and antiseptic. Send for Circular. Price No. 2, $10.00; No. 1, $7.00.

PUTNAM & CO., 244 Water St., NEW YORK CITY.

STEEL AND BRASS

MAILS.

Liberal Discount to Dealers.

J. WALDER, Paterson, N. J.

REEDS, HARNESSES, LINGOES, SHUTTLES AND QUILLS.

RICHARDSON BROTHERS,

542 PEARL STREET, NEW YORK,

Manufacturers and Dealers

Fine Colored Textile Wrappers, Silk Papers & Specialties,

for Finishers of

COTTON, SILK AND WOOL GOODS. "ROYAL" ENGLISH PRESS PAPERS.

Patent ROUND EDGE CLOTH BOARDS.

SAVE	THE CHAFFEE PATENT CLOTH BOARD,	Clean
Their Cost	Made of paper and wood, Needs no covers, Will not split or warp; Not liable to break.	LIGHT
In Freight.	MFG. BY CHAFFEE BROTHERS COMPANY, OXFORD, MASS.	Strong
	BOX SHOOKS and CLOTH BOARDS.	

Shaw's "Victor" Travelers

Manufactured by

VICTOR SHAW RING TRAVELER CO.

Incorporated 1899.

23 Sabin Street, PROVIDENCE, R. I.

ELEVATORS.

OUR FACILITIES INCLUDE

A modern factory, competent engineering talent, a local agent and a force of skilled mechanics in Boston, New York, Philadelphia, Baltimore and Atlanta.

We offer you the best Passenger and Freight Elevators (Hydraulic, Electric, Belt or Hand Power). We guarantee right prices for the apparatus furnished. Prompt attention to inquiries and prompt shipments.

Morse, Williams & Co.,

Philadelphia

Boston **New York** **Baltimore** **Atlanta**

Doffing Baskets

That Will Suit You!

Morris Spring Bottom Duck Mill Baskets are just the thing for doffing.

We have used a set of them in our cotton mill for about three years. They are in active service now and will wear a long time yet.

Will your wood and fibre boxes last that long?

Ours never did.

Our Duck Mill Baskets are the cheapest in the end.

Send for booklet and prices. Address,

Morris & Co., Dep't T, **Groveville, N. J.**

The LANE Patent Steel-Frame

CANVAS MILL BASKET

FIG. 22.

Made of extra cotton duck. Frame of round spring steel and guaranteed against breakage. Rim bound with leather. Perfectly smooth inside. Light weight, strong and durable.

There are other special features in Lane Baskets to which is due their widely increasing popularity. Write for price list to

W. T. Lane & Brother,

MANUFACTURERS,

PoughKeepsie, N. Y.

FIG. 27

Sold by Leading Mill Supply Houses.

KILBURN, LINCOLN & CO.,

FALL RIVER, MASS.

MAKERS OF

LOOMS

For PLAIN and FANCY WEAVING.

Represented in the South by
O. A. ROBBINS, . . . CHARLOTTE, N. C.

Vulcan Fibre Roving Can.

BODY—Vulcanized Fibre. SIDE SEAM—Riveted with Patented Clinched Rivets. RINGS—Tinned Steel, Brazed Joints, Curled Edges. BOTTOM—IXXX. Tin Star Corrugation; Fastened without the use of nails or screws, will not crack, warp or shrink and cannot come out. FINISH—Coated inside and out with moisture proof coating, handsome and smooth. WEIGHT—About one-half pound per inch diameter. SIZE—All cans to any exact size, perfectly round and true. DURABILITY—Superior to any other can.

Also Manufacturers of

HILL'S IXXX TIN AND GALVANIZED IRON DYE HOUSE CAN.

James Hill Manufacturing Co.,

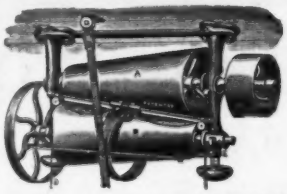
PROVIDENCE, R. I.

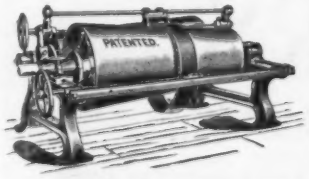
EVANS' FRICTION CONES.

Eight Thousand Sets in Operation in This Country and Europe.

A partial list of manufacturers who have Evans' Friction Cone Pulleys in operation, transmitting from ONE TO FORTY HORSEPOWER:

National Biscuit Co., Richmond, Ind., 300 sets. Merrimack Mfg. Co., Lowell, Mass. 20 sets. Arnold Print Works, No. Adams, Mass., 11 sets. John & James Dobson, Philadelphia, Pa., 84 sets. Stinson Bros., Philadelphia, Pa., 40 sets. Frederic J. Falding, New York, N.Y., 20 sets.



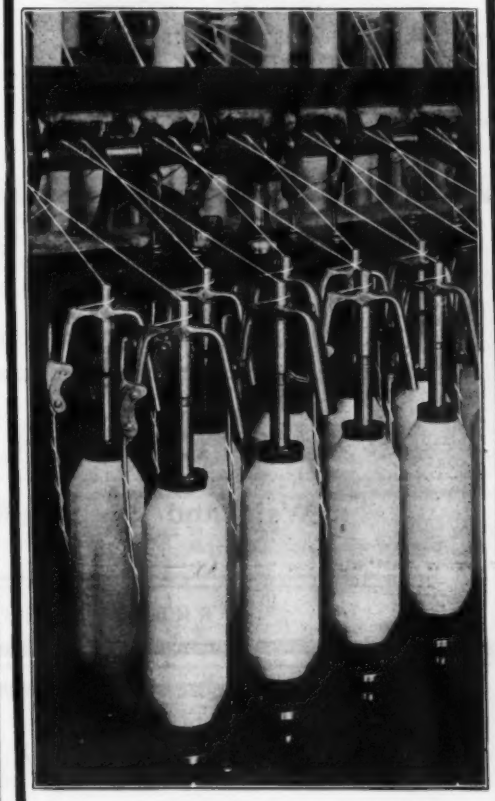


Smith & Winchester Co., So. Windham, Conn., 250 sets. Furguson & McRae, Belfast, Ireland, 25 sets. Mercantile Laundry, So. Windham, Conn., 250 sets. Washburn & Moen, Worcester, Mass., large number, all sizes. Dennison Tag Co., Boston, Mass., large number, small sizes. Saco & Pettee Machine Co., Newton, Mass., 275 sets. Pacific Mills, Lawrence, Mass., 13 sets.

Send to G. FRANK EVANS, 1288 Center Street, Newton Center, Mass., for Illustrated Catalogue.

THE DUNN FLYER

Presents new principles and methods in Flyer construction that have proved their value and made its use of marked advantage.



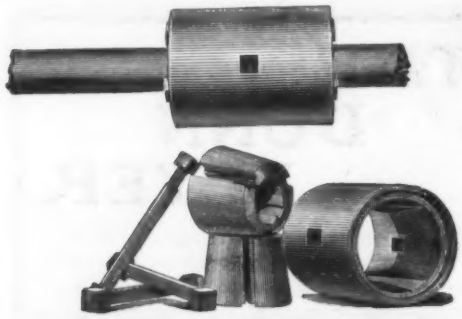
3½ Inch Diameter Bobbins

are built with 7x3 Dunn Flyers on 4½" space frame with the further advantage of being able to run as fine as 15 hank roving on same flyers. Further information may be promptly obtained by addressing the

TEXTILE MACHINERY COMPANY

50 State Street,

BOSTON, - MASS.



THE "SELLERS" MAKE OF

DOUBLE CONE VISE COUPLING

has a way of holding shafts together, that no other COUPLING can equal.

WILLIAM SELLERS & CO., INCORPD.

PHILADELPHIA, PA.

Makers of

SHAFTS,
COUPLINGS,
PULLEYS,
HANGERS,

and all most approved appliances for the Transmission of Power.

SEND FOR CATALOGUE AND PRICE LIST.

MACHINE TOOLS.
INJECTORS. POWER CRANES.

Singeing Machines

FOR ALL KINDS AND WIDTHS OF GOODS.

CHAS. H. KNAPP,

Wait and Rye Streets, PATERSON, N. J.

CORRESPONDENCE SOLICITED.

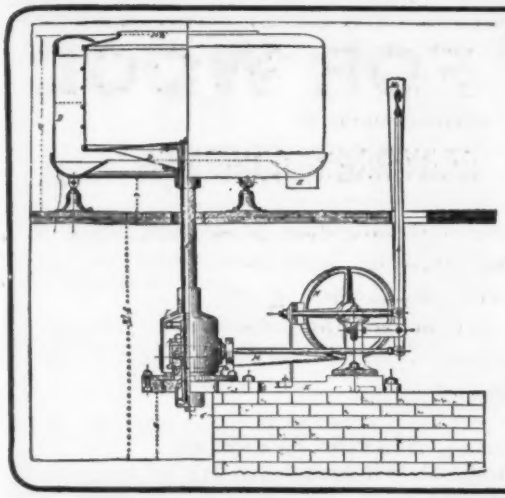
SALEM ELEVATOR WORKS

SALEM, MASS.

ELEVATORS

ESPECIALLY ADAPTED FOR MILL USE.

SEND FOR ILLUSTRATED CATALOGUE AND ESTIMATE.



Weston Hydro Extractors.

Special Machines for Acid Work.

SHAFTING, PULLEYS,
FRICTION CLUTCHES, Etc.

American Tool and Machine Co.,

Incorporated 1864. Founded 1845.

109 Beach Street, Boston, Mass.

$75.00 to $700.00

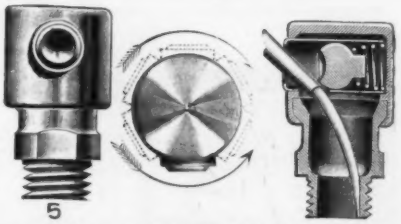
is what you pay for a textile machine with no protection to bearings.

$3.00 to $9.00 Per 100

will buy oil tight and dust proof

TUCKER Oil CUPS

Send for Catalogue und Samples.



W. & C. F. TUCKER, Hartford, Conn.

STEAM TRAPS

NEW FEATURES: Wearing Parts, Valve and Seat Renewable.

We manufacture Steam Traps for all duties, High and Low Pressures, returning the Condensation back into Boiler or discharging to Hot Well, Tank or Atmosphere.

No Elastic Gaskets, all Joints Ground Metal and Metal.

Class A Return Trap

SEND FOR Catalogues A, B, and C.

ALBANY STEAM TRAP CO.,
ALBANY, N. Y.
Established 1870.

PRED'K TOWNSEND, Pres. JAMES H. BLESSING, Gen. Mgr.

WICKES

Vertical Water Tube

BOILERS

Built by
WICKES BROTHERS,
SAGINAW, MICHIGAN.

Branch Offices at
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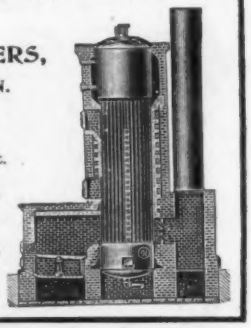
Pittsburg 45th and A. V. R'y.
Chicago 1214 Marquette Blds.
Boston 922 Board of Trade Bldg.
Denver, Colo.
Birmingham, Ala.
Send for Catalogue.



SCAIFE SYSTEM OF SOFTENING AND PURIFYING WATER

FOR STEAM BOILERS, TEXTILE WORKS, BLEACHERS, ETC.

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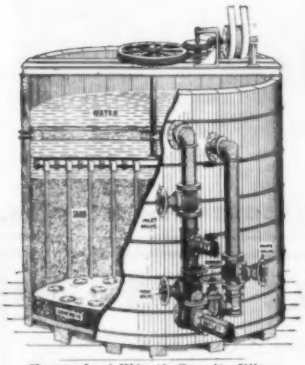

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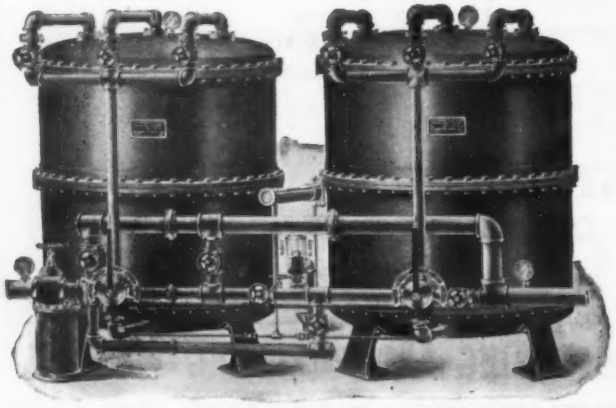

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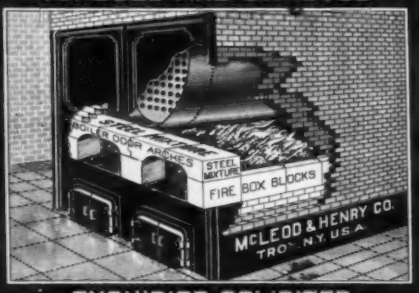

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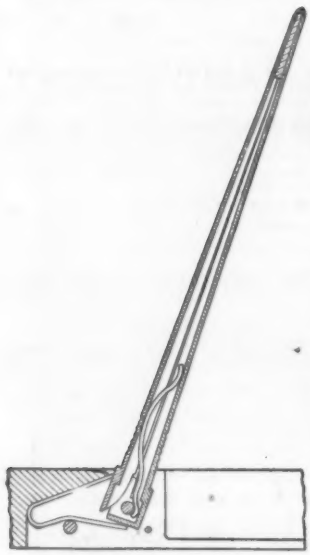

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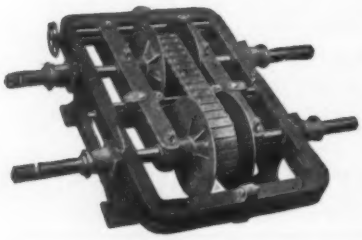

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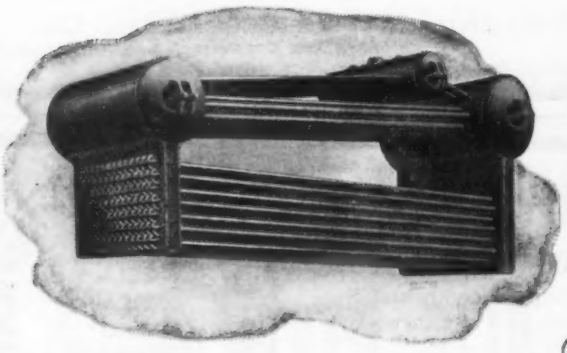

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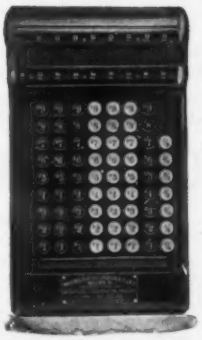

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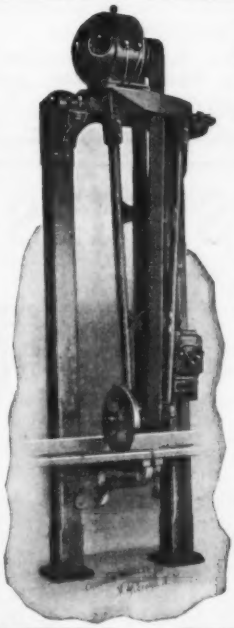

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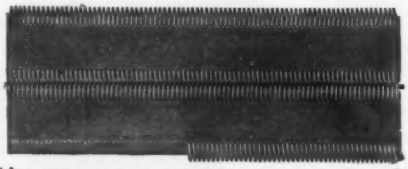

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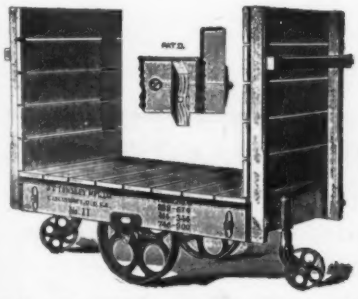

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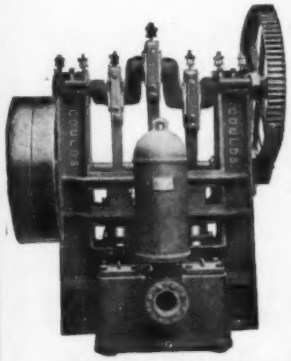

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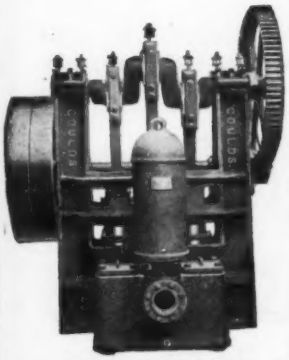

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for 1904

The Annual Official Directory for 1904, compiled by the Textile World Record, is now ready for delivery

Abstract of Table of Contents.

PART I. Textile Manufacturers.

Textile Establishments of the United States and Canada
Alphabetical Index of all mills in the United States and Canada.
Mills with Worsted Machinery.
Number of Spindles and Looms in the United States.
25 Textile Maps, showing location of cities and towns where there are mills.

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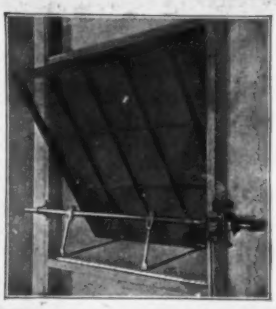

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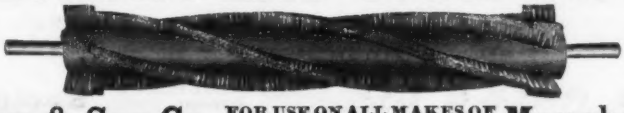

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Published Monthly by

LORD & NAGLE COMPANY,

FRANK L. NAGLE, President. HENRY G. LORD, Treasurer.

MAIN OFFICES:

299 Devonshire St., Cor. Summer St., Boston, Publication Office.

(Publication Office.)

425 Walnut Street, Philadelphia.

BRANCH OFFICES:

123 Liberty St., New York. 115 Dearborn St., Chicago.

Entered at the Boston Post Office as Second-Class Mail Matter.

SAMUEL S. DALE, Editor. E. A. POSSELT, Editor Process Department.

Subscription and Directory Rates.

The **Textile World Record**, including **Annual Official Directory**, (Traveler's Edition),	$3.00 per year
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There are 22 textile maps; gives population of town and railroad connections.

PART II. Is the Yarn Trade Index, containing classified lists of yarn spinners, arranged according to kind of yarn, size and number spun, etc. All the mills with worsted machinery are included in this section.

PART III. Contains Classified List of mills doing order and commission work, also dyeing, finishing, bleaching and printing establishments, classified according to the kind of work done, and so far as possible giving width of goods handled; also shoddy, extract and flock manufacturers and wool scouring establishments.

PART IV. Manufacturer's Selling Agents and Dry Goods Commission Merchants, giving the name and address of concern, character of goods handled, different departments, with managers, list of manufacturing clothiers, and suit and cloak manufacturers, giving specialties and buyers names. A list of city offices of textile mills is given.

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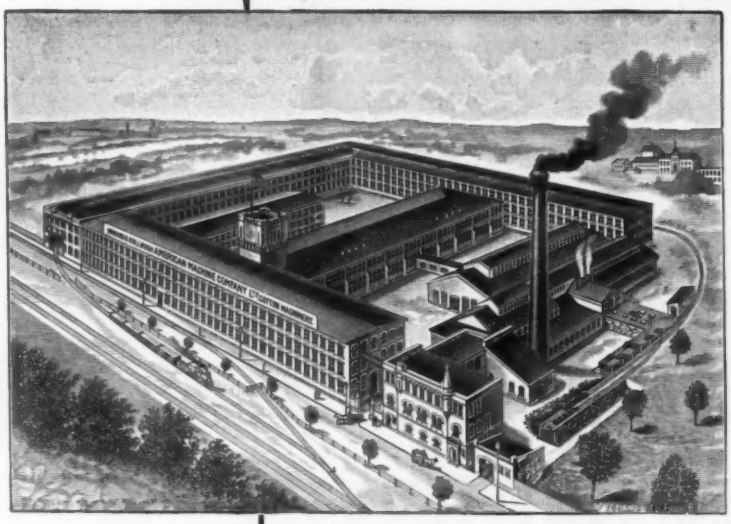

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Monthly Comment.

STABILITY ASSURED.

The election of President Roosevelt and a Republican House of Representatives insures a continuance of the policies under which the United States has enjoyed an unparalleled degree of prosperity. The people have decided by an overwhelming vote that there shall be no revision of the tariff in the direction of free trade; that the making of bargains with other American and foreign countries for the reciprocal exchange of markets shall be negotiated by the men who have so steadfastly protected the domestic market against the products of cheap foreign labor; that they want a President who not only believes that one hundred cents make a dollar in this country, but who has a party back of him that is not afraid to say so; that the large corporations called trusts shall be regulated by the party which has contributed so materially to the prosperity which makes corporations large.

Merchants, manufacturers and all the varied interests of the country are secure from the dangers of a change in the political control of the Government. The textile industry, in which more people are employed than in any other branch of manufacturing, and which has in the past suffered so severely from a disturbance of political conditions, is especially fortunate in the assurance of stability for the next four years. Relieved from any fear of political change the people can go to work to develop still further the vast natural resources of the country, and in doing this should be mindful that their present happiness is due largely to the gifts of Nature, abounding crops with which to feed and clothe the people, and a surplus which other nations must have and which guarantees peace with all the world.

Mill Tests of Colonial Cotton.

As is well known, the various European governments have, during the last three or four years, been putting forth strenuous efforts to establish cotton growing in their colonies. Many and serious difficulties have been met, but they have succeeded in obtaining from different colonies small lots of cotton which have been carefully tested in different mills to determine their value. Recently the French Colonial Cotton Association issued a report giving the results of such mill tests with native cotton from the Soudan, Dahomey and Cambodge. The Soudan cotton was tested by M. Petrot of Granges; the Cambodge cotton by M. Paul Ancel-Seitz; that from Dahomey which had been previously tested for spinning and weaving qualities, was tested by MM. Ancel-Seitz and Walter Seitz in the bleaching, dyeing and printing processes. The results are summarized as follows:

M. Petrot states that he was not able to spin the Soudan fibre finer than 15s warp and 20s filling. From this yarn he made a 68 by 68 Rouen cretonne, to which he refers as follows:

> This yarn, fairly white, clean and uniform, with a moderate amount of twist, but rather specky, gives a fabric which, although it does not have the appearance of cretonne made from pure American cotton, is nevertheless of good merchantable quality and warrants strong hopes in the future of Soudan cotton.

The same manufacturer tested two lots of Cambodge cotton which varied widely from each other. One sample was short, fairly regular, elastic, sound and yellow, but contained much foreign matter in the shape of leaves and nibs. He thus refers to this cotton:

Although inferior in quality, strength and length to Louisiana cotton, it is possible, although at the expense of production, to produce a yarn equal to that made from American cotton. With machines suited for this grade of Cambodge cotton, the production would certainly be more satisfactory. We find that this cotton works better than the Louisiana cotton on the drawing frames, because of the fineness of the fibre. On a black table the yarn seemed fairly regular, the only criticism being warranted by the nibs which were due to the bad work on the card.

The second sample of Cambodge cotton was, however, much inferior to the first. The fibres varied widely in length and possessed neither elasticity nor strength. The cotton contained a large percentage of foreign material and an enormous number of nibs. M. Petrot refers to this lot as follows:

This grade of Cambodge cotton is not suitable for spinning purposes. It yields an enormous percentage of waste and necessitates an abnormal amount of care at every stage of the process. The yarn obtained from it is practically worthless; it was only by an excessive and impracticable amount of twist that it was possible to obtain any kind of a thread.

The fabrics made of Dahomey cotton were tested in various bleaching, dyeing and finishing establishments with other goods made from American cotton. During the processes there were no marks to indicate to the workmen the origin of the raw material in the cloths which were subjected to the different processes of boiling, scouring, bleaching, mercerizing, dyeing, printing, and finishing under normal conditions of working. The results of these tests are reported as follows:

The cloths made of Dahomey cotton have taken all the mordants and the colors are well fixed on them. The shades are clear and uniform, the finish satisfactory and the results from mercerization absolutely perfect. We reserve our opinion as to napped fabrics for which the treatment does not seem to be favorable. All the other fabrics had the appearance of being made from American cotton. It would be extremely difficult, if not impossible, to detect any difference between the two as regards strength and solidity. This cotton will prove of great value and it can be produced with the certainty that it will find a ready market.

The Supply of Wool.

The recent rise in prices and the present activity of the wool market, calls attention to the contrast between the present rise and the upward movements of 1897 and 1899. In the first named year a change from free wool to high tariff on wool was accompanied by enormous importations previous to the date on which the new tariff went into effect, and by a rise in wool prices to a level of 48 cents for fine medium territory.

The stock of wool proved too heavy for the maintenance of this level, and the price sunk to 42 cents in 1899, only to be carried to 63 cents within less than a year by the mad speculation of 1899-1900. Again the stock of wool was found to be too heavy and fine medium dropped to 38 cents in 1901. Sobered by their losses speculative dealers have been content since then to let prices be controlled by supply and demand. Values have shown a continuous upward tendency and today the present quotation of 55 cents for fine medium rests not on speculation, but upon a real scarcity of wool, brought about by an annual domestic supply of 125,000,000 pounds of clean, and an annual domestic demand of 280,000,000 pounds. To supply the deficiency the equivalent of 155,000,000 pounds of clean wool is brought into the country subject to the Dingley duty. This situation shows plainly that the present quotations for wool rest on a very substantial basis. Flocks of sheep cannot be improvised and tariffs are not easily changed, consequently the present condition in the wool market is likely to continue indefinitely.

The safety valve for the relief of the high pressure of demand on a limited supply is found in the practically unlimited supply of second hand wool or wool substitutes. The consumer can pay so much and no more for woolen clothing. When the price of wool rises above his purchasing power, his wants are supplied with fabrics made from cotton and wool shoddy. This has been the experience in the past and, doubtless, will be duplicated in the near future if wool prices rise much above the current level.

American Cotton Goods in China.

The exports of American cotton goods to China has decreased greatly during the past two years. For the eight months ending August, 1904, the cotton cloth sent to the Chinese Empire amounted to 107,377,760 yards, as compared with 164,589,829 yards during the corresponding period of 1903, and 254,892,479 yards in 1902. The decline is doubtless due to the war between Japan and Russia, which has practically put an end to trade with Manchuria since the midnight attack of the Japanese torpedo boats on the Russian war vessels at Port Arthur. The exports to China in 1903, before the war, showed a decrease of over one-third, as compared with 1902. This was doubtless due to the fear of war, which led merchants to restrict their obligations as much as possible.

While the comparison of the eight month periods of 1902, 1903 and 1904 show a considerable shrinkage of American trade, there is unquestionably a marked revival of business in our China trade which is not disclosed by these statistics. For the month of August, 1904, the cotton cloth shipped to China amounted to 44,247,094 yards, as compared with 4,096,161 yards in the corresponding month last year. In other words, we shipped eleven times as much cotton cloth to the Chinese in August of this year as in August, 1903. This activity is still in evidence and exporters report a large export trade. At the August rate the exports for the year would reach 530,965,128 yards, or more than double the amount exported in 1903.

The following extract from the London Times of July 25, 1904, shows that American cotton goods are more than holding their own in that great market:

> While conditions in the dry goods trade remain unusually quiet, as far as the domestic demand is concerned, the export business, particularly for China, shows no signs of falling off. In this connection a remarkable change has come over the character of the Chinese demand, which is traceable to the direct representation of American goods in that country. Three or four years ago the demand was confined entirely to the heavier classes of brown cottons, while the most recent orders have been for goods weighing 4 yards, 4.25 yards, 4.50 yards, and as light as 4.87 yards to the pound, and Americans are thus invading markets which have hitherto been monopolized by English manufacturers. The falling off in the heavy-weight trade is due to a great extent to the closing of Manchuria by the war, this being the great American market for heavy-weight goods; but the increase in the demand for light-weight goods dates from the time when a well-known American export house opened a branch in China and displayed for the first time the large variety of products manufactured at its Southern mills. These goods are being shipped to Shanghai, and from there are being sent to the interior.

War and the Textile Trade.

The war with Japan is seriously injuring the domestic trade of Russia. At the great Nijni Novgorod fair which recently closed the sales of cotton goods were from 30 to 40 per cent. below those of last year. Red cotton cloth, which is used largely for skirts by the Russian peasant women, was sold at a material reduction, while other grades of goods were sold under a guarantee good until Dec. 14. It was found necessary to extend credits for one and even two months, and in spite of these concessions trade remained in a stagnant condition.

Merchants and manufacturers find it difficult to obtain credit at the banks, as a large part of the funds of the country have been absorbed by war loans. Commercial transportation over the Siberian railway is closed, and a large market is thus temporarily lost. There is a lack of confidence in all branches of business, and trade is restricted to current requirements, as the unsettled political conditions deter even the most daring speculators from contracting for future deliveries of goods.

Cotton Goods in the Philippines.

The cotton goods imported into the Philippines in May, 1904, were classified as follows, according to country of origin.

Great Britain	38.41 per cent.
Spain	34.32 per cent.
British E. I.	5.57 per cent.
United States	4.72 per cent.
Germany	4.04 per cent.
Switzerland	2.59 per cent.
France	1.43 per cent.
Other	8.92 per cent.

The German Velvet and Plush Trust.

German manufacturers of velvet and plush fabrics are organized under a cartel by which each member is bound to conform to certain rules regarding fabrics and designs, as well as prices and terms at which the goods are sold. The arrangement has worked well for the trust in the German market. Prices have been well maintained and many trade abuses have been corrected. The production of the mills, however, has been in excess of the domestic demand, and manufacturers have been forced to seek abroad an outlet for the surplus. In this export trade they have encountered the competition of foreign manufacturers who were not bound by the restrictions of the German cartel. This has placed the German manufacturers at a serious disadvantage and the terms of the cartel have recently been modified, as far as the export trade is concerned, so as to place the members on equal terms with their foreign rivals. Following is the agreement providing for the change by which it will be noticed that the German manufacturer is still prohibited from making, even for export, any design besides those allotted to him by the cartel:

I agree for the ensuing year in case I desire in the export trade to avail myself of the privileges not stipulated by the conditions of the association, to furnish on demand of the confidential agent of our association a proof that the exportation has been really made and to allow him, if the necessity arises, to examine my account books. In every case where I do not furnish on demand the proof of the exportation I will submit to a fine of 20 marks for every 100 meters of merchandise in question.

Likewise I agree for the ensuing year to use for the export trade only those designs that are allotted to me and to furnish on demand of the confidential agent of the association a proof that I have loyally kept this agreement. In other words, when I do not furnish this proof I will submit to a fine of two marks for each of the designs in question. The confidential agent of our association will decide exclusively and definitely the question whether the fine shall be imposed or not and is thus appointed arbiter for all.

This change in the velvet and plush cartel will result in allowing the German manufacturers of this line of goods to sell their product abroad for less than it is sold in the German market.

The Efficiency of Labor.

In discussing the relative industrial conditions in different countries, the wages paid per day or week is often taken as representative of the value of labor. This, however, is not wholly true, although the rate of wages and working hours undoubtedly have an important influence upon the labor cost of the product. In a paper read at the Manchester Technical School last month, Lord Brassey called attention to other factors which enter into the question of labor cost. Referring to the textile industry, he said:

Here, in the centre of the cotton industry, we may still boast that we hold a commanding position in cotton. In the British mills half a million workers are employed—three and a half times as many as in Germany. For any comparisons of British labor efficiency with that of our rivals in Continental Europe Professor Schulze Gaevernitz is the leading authority. English workers are said to be unsurpassed in energy, skill, and watchfulness. Here we have two looms (sic) to each operative. In Saxony we find one operative to every loom. With fewer hands less supervision is required. Wages with us are considerably higher; yet the cost of spinning is less than in Germany. Factory operatives in Germany are not to the same extent as in England trained from childhood.

In England the cotton industry is more specialized, and we have an advantage for the production of goods of the finer kinds (of which our exports chiefly consist) in the humidity of our climate. In extent of production the cotton industry of the United States stands second only to that of Great Britain. In their vast home market the American manufacturers are protected from foreign competition. Their operatives are not of surpassing skill. They are a migratory body, recruited from every nationality.

The cotton industry of France is of long standing and is on a considerable scale. French designs are remarkable for beauty and inexhaustible originality. The competition of Bombay with Lancashire is of special interest. Though the mills in India are run 350 days in the year and for 11 1/2 hours a day, with swarms of hands in comparison with the numbers needed in English mills, and with working wages on a far lower scale, the labor cost is considerably higher than in Lancashire, where the hours of labor are 51 1/2 in the week and 306 days only are worked in the year. The Indian operatives have less physical endurance and less power of continuous application.

Great efforts were made to establish indigo culture in the Carolinas at the time of their settlement. It was introduced into Louisiana by the French in 1718 and in ten years had become an article of export.

Wages and the Tariff on Woolen Goods.

The woolen manufacturers of France are asking for an increase in the duty on woolen goods imported into that country, to protect them from foreign competition, which has become more severe since the reduction in the hours of labor. The law has gradually reduced the time to ten hours per day, but the operatives have successfully resisted all attempts to reduce their wages. The Tourcoing Chamber of Commerce has issued an address to the government, from which the following passage is taken:

> The woolen industry has not only been unable to hold its own against foreign competition in the home market, but day by day we are losing our foreign markets, for the application of the law of ten hours, in augmenting the cost of production, renders competition with our foreign rivals impossible. It is then of vital importance to accord a compensation which will reserve to the industry at least the home market, by a protection more efficacious. We ask, therefore, that the public powers will study a modification of our Customs tariff in such a way as to accord to the woolen industry an elevation of the Customs duty equal to the extra cost of production caused by the application of the law of ten hours, taking as basis of comparison the twelve-hour day which existed in 1892, when the present tariff was drawn up."

Defective Eyesight in the Mill.

An interesting investigation of the eyesight of cotton mill operatives has recently been made by Dr. Geddes of Heywood, England. He reports that a much larger proportion of the women employed in a mill wear spectacles than women engaged in other occupations. He ascribes this to the particularly trying character of the work, the operative being compelled to gaze fixedly at fine threads during long hours and often in a very trying light. Dr. Geddes discovered that a very small number of the male operatives wore spectacles, although the proportion of men with defective eyesight was as large as among women. He explains this by citing a case which he considers to be typical of English mill life. A young man of about twenty years of age complained of headache and that he could not see the "ends." Upon examination, the doctor discovered that his eyesight was very much impaired and that he required spectacles. When this remedy was suggested, the operative replied that if he wore spectacles he would be discharged, as no one wore them in the mule room. Dr. Geddes then says:

> One is now in a position to understand how difficult it must be for, say, a spinner working "fine counts," or even "coarse counts," to do his work well, if he suffers from even a small degree of astigmatism, an error of refraction which renders it very difficult for the sufferer to see lines clearly. Such a condition makes the spinner's life intolerable, and, of course, his work is not properly done. The spinner may be aware of the cause of his headache, etc., but dare not wear spectacles to end his trouble for fear of dismissal.
>
> The employer finds his work badly done, and not being aware of the probable cause discharges the workman, and so the cycle of suffering and ill-feeling continues. I feel so confident that the greater part of bad work is due to bad vision that were I an employer of spinners, and found that certain men turned out bad work I would at once suspect the men's vision as the cause, and would insist upon them wearing proper lenses, if upon examination my suspicions were verified. One can fancy the spectacled German easily beating his English rival if the latter remains "short-sighted" and "unspectacled."

He advises the employers of labor to make inquiries regarding the eyesight of their employees and to overcome the prejudice that evidently exists against the wearing of spectacles by textile workers.

This is a subject that American manufacturers might well investigate. It is by no means improbable that a large number of the operatives in our mills are suffering from defective eyesight. It would be strange if this were not the case, as mill work is very trying to the eyes.

French and Italian Silk.

The Syndicat des Marchands de Soie de Lyon makes a practice each year of obtaining reports regarding the production of silk from the officials in the different communes throughout the country. The report for the current year has recently been published. It shows that in 738 communes the production this season was 10,836,861 pounds, as compared with 8,123,380 pounds in 1903, an increase of almost exactly one-third over last year. Still more favorable reports of the production of silk come from Italy, where it is estimated that this year's production will be 45 per cent. greater than last year. Basing the estimate of the entire French production on the partial report above given, the total for this year will be 17,603,731 pounds, as compared with 13,194,531 pounds in 1903.

Fibres at the St. Louis Exposition.

BY CHARLES RICHARDS DODGE.

During my six weeks' visit to the St. Louis Exposition I have been particularly interested in the exhibits of vegetable fibres, as, in many instances, the collections are larger and finer than I have seen at former expositions.

Passing over the extensive displays of American cottons, chiefly sent as State exhibits, there is little else of interest, save from Egypt, that country sending a very interesting series, while Mexico exhibits some very good examples. Flax is conspicuous by its absence, which is something to be regretted, particularly as the displays of foreign flax at Chicago, and at Paris in 1900 were remarkably fine. Mexico shows a little flax and several bundles of superb straw, both retted and unretted. Hemp is likewise not in evidence, though Kentucky sends an interesting series; these hemps, however, are coarse and cheap, compared with the imported fibre.

Probably the finest general display of raw fibres is from Japan—a country that stands first in nearly everything at this exposition. I found in the Japan-Formosa exhibit some of the most superb examples of raw and degummed ramie fibre that I have ever seen, and I understand that the raw product can be laid down in San Francisco at about 4 1/2 cents per pound. The filaments are not only of extra length, but the fibre shows superb strength. Japanese hemp is also shown, though not in the variety that I have seen at some other expositions. The most complete exhibit of Japanese hemp that I remember was shown at Chicago, 1893. The best hemps of Japan are never exported. This country is now preparing and manufacturing flax according to European methods, and a superior article is being produced.

While Japanese chip and straw braid are not strictly fibres, the collections of these products, which are of surpassing beauty, are worth a mention. We are importing largely both chip and straw for millinery uses, and the product is the best in the world. These goods are displayed in the Forestry Building in infinite variety and are worthy of examination. Japan also sends the finest collection of bamboo that I have ever seen. It carried off a grand prize.

A most interesting exhibit of fibres is that made by the Philippine Government, and it is especially interesting because we have so recently become acquainted with the fabrics produced from them. And to make it more of an object lesson to laymen, as well as students, the fibres are being spun and woven on the spot. The fibres employed are chiefly Manila hemp (Musa textilis), the maguay (Agave Americana), and the pine apple or pina (Ananassa sativa). The Manila hemp fibre so largely employed in the United States for the manufacture of binding twine, is universally used in the Philippines for fabrics, sometimes mixed with cotton, producing a durable fabric, yet at the same time one that is adapted to the needs of the people living in a warm climate. The finer grades of the fibre are, of course, used for this manufacture. These fabrics are being produced at the Exposition, the whole process being a part of the show.

The maguay fibre, which is white, resistant but flexible (and very elastic), is only employed in the manufacture of ships' cordage, for ropes for use in the mines, and for nets and hammocks. The industry is comparatively new in the islands, and little of fibre or product is imported. The same fibre can be obtained in Mexico, but its production has hardly reached a commercial plane.

The most beautiful fibre produced in the Philippines is the pine apple or pina, from which are manufactured a variety of exquisite fabrics and lace work. These products are on sale at the exposition and those desiring to possess samples may obtain them at no great outlay of money. The pina cloth, particularly when woven with silk in delicate shades, with patterns in stripes, is elegant beyond description. Pina laces are also shown in great variety, some of the lace

handkerchiefs, of gossamer fineness, being exquisitely delicate and beautiful. Unquestionably these products are unique, and but for the fact that there are no machines to produce the fibre, which must be extracted laboriously by hand methods, the industry might be considerably extended as the beauty of the products becomes better known.

Cotton is grown in the Philippines, though it is a small industry at present. The native manufactures are coarse cloths, thread and small cordage.

Among other useful Philippine fibres should be mentioned the pangdan, from which are produced bags, mattings, mats, etc., which are much in evidence at the exposition. The material is derived from several species of the screwpine, the split leaves being closely plaited. Burri, or strips from the leaves of the Talipot palm, is employed in weaving the native hats, though other substances are also employed. Many interesting examples of these hats are exhibited.

After viewing the fine displays of cheap and useful fabrics here shown, and which are so well adapted to the needs of the Filipinos, as we are informed, it strikes the visitor to the native villages rather oddly that many of these natives should be exhibited almost in a state of nudity, save where a single garment (an American readymade coat) is sometimes donned for comfort or appearance.

Mexico shows a wealth of hard fibres or those which are adapted to cordage manufacture or for bagging, hammocks, etc. Some superior examples of sisal hemp are shown but the larger portion of the collection is made up of fibres which, while used to a considerable extent in the country where produced, are not to any degree commercial forms. A few of these secondary cordage fibres are beginning to be exported, however, especially certain forms of maguay—other than the Agave Americana fibre—a species of yucca, and some others which may be used as a binding twine mixture.

I should not omit to mention in passing, however, the fine exhibits of istle, or Tampico fibre, which is a matter of large export. While this is a brush fibre it is also used for bagging in Mexico and sometimes for cordage. In both the Mexican and Nicaraguan exhibits I found fine examples of that wonderful fibre, derived from a long-leaved species of Bromelia sometimes known as the pinuella, which is almost as fine as silk, often of a pale greenish color, and of such superb strength that a few small filaments will resist hand pulling. The fibre would jump into commercial prominence at once could it be secured cheaply and in quantity, for there are no machines that can properly handle the long, thin leaves, and the little that is prepared is produced by laborious hand methods of extraction. I have seen small hanks of the fibre that were quoted at a dollar a pound, Mexican.

Venezuela carried off a gold medal for her fine collection of nearly 200 specimens of the fibres of that country, which are displayed in large pendant hanks across the entire end of the Venezuelan space in the Forestry Building. The collection probably embraced 80 or more species of the well-known fibres of Central and South America, and included sisal hemp, fourcroya fibre, maguay, pine apple, banana, many agave fibres, and other semi-commercial forms, besides a wealth of interesting forest fibres, or those derived from the inner bark of trees, many of which are worthy fibres that are largely employed by the natives in the domestic economy for cordage, hammocks, etc.

Ceylon showed a collection of about 50 species of native fibres, some of which were new to the writer, though of little interest to the commercial world. Some India sisal hemp, however, is worth a passing notice, though that country made no attempt to send a fibre exhibit, notwithstanding it is rich in fibres. While the home of jute is India, the best and almost only worthy examples of jute are from Formosa and Rhodesia. New Zealand flax is here exhibited for the first time since the Philadelphia exposition of 1876, when the Government sent to this country a remarkable collection of this flax, showing the great variety of its forms and illustrating the varied uses of the different forms in manufacture, from cordage and

cables to sewing thread and woven fabrics. The present exhibit is only the low-grade form, which is grown for export, for cordage manufacture. It is not generally known, however, that New Zealand flax has had considerable employment in the manufacture of "staff" for the exterior of exposition buildings. New Zealand flax is at present little used in American cordage, where once there were large importations for binding twine manufacture.

The only novelty I find at this exposition is a Brazilian fibre known as "Aramina," from which is manufactured and exhibited bagging and coarse fabrics. The fibre is being produced in cultivation, and is manufactured by a company and promises to become a profitable industry. The fibre was quite familiar to me, and I later ascertained that it was produced from our old friend Urena lobata, the "tea plant," or "Caesar weed" of the southern United States. As long ago as the exposition of 1876, at Philadelphia, I found in the Brazilian exhibit good cordage made from this fibre, and I have since seen examples of it from other parts of the world. This is the first attempt, however, at commercial utility. It received a gold medal, not so much for the fibre or its manufactures, as for the supposed benefit to mankind in its utilization as a new industry. The plants are small shrubs and when grown closely together, under proper conditions of heat and moisture, they produce branchless canes from which the bark can readily be detached, and the fibre subsequently extracted. The largest present use of the fibre is in the manufacture of coffee bags, though the promoters of the industry claim that it is adapted to the manufacture of packing and sack cloth, oil canvas, sail cloth, carpets, upholstery curtains, table cloths, fine twines, cordage, etc.

A machine has been constructed for stripping the barks in the field; this is then dried for transportation to the factory, and in this state is subsequently treated by chemical process to produce the spinning fibre. It is claimed that once planted, like ramie, crops may be secured for several years without replanting. The Government is encouraging the enterprise by reducing the export tax on coffee from 11 per cent. to 9 per cent., ad valorem, where Aramina bags are used. The fibre is creamy white in color, soft and lustrous, and possesses the strength of a common grade flax fibre, and therefore cannot stand comparison with foreign hemp, the better imported flaxes, or ramie. We have in the United States several wild bark fibres that are as good, and one, at least, Asclepias incarnata, that is better. But the labor question, and the lack of machinery are the obstacles that prevent their utility, though it should always be remembered that these fibres are only flax substitutes. Brazil shows many other fibres at the exposition, but they are of no special interest here. I should mention, however, the large exhibit of commercial piassaba or brush fibre in the Forestry Building. Many other countries showed small collections, but I have mentioned all that are noteworthy. Many of these fibre exhibits will remain in the country, as they will go to the principal museums at the close of the exposition.

THE "RECORD" OF THIRTY YEARS AGO.

The old files of the Textile Record, the Industrial Record, Textile World, and other publications which from time to time were merged with them, are interesting to look over. They form perhaps the best chronicle of the state of the textile industry in those years. We have in our office complete files of the Industrial Record from 1866. This was the first textile journal established in the United States, and if we are not mistaken the first in the world. The Industrial Record absorbed five other publications that had a short life, viz: The American Textile, The Designer and Weaver, Warp and Weft, the Woolen Manufacturer, and the Boston Textile. The Textile Record was established in Philadelphia, in 1880, and proved a formidable competitor. The Textile World was established in 1887, and ten years later the old Industrial Record was merged with it. The present Textile World Record represents eight different publications merged or combined from time to time.

The Industrial Record of thirty years ago was a pretty good publication, and judging

from its appearance it carried the advertising of practically all the leading textile machinery firms and dealers in supplies, just as the Textile World Record does today. Many of the same concerns are represented in its columns and some of them have been there uninterruptedly during all this time.

In the dyestuff line appear the following advertisements in the issue of July, 1874: New York Dyewood Extract & Chemical Co.; Weeks, Dupee & Soren, of Boston; W. H. Place & Co., of Providence; Pennsylvania Salt Mfg. Co., Philadelphia; Taylor & Barker, Lowell; Gifford, Sherman & Innis, New York; Morris, McDonald & Co., Philadelphia; Jerome Marble & Co., Worcester; Beach & Co., Hartford; A. Poirrier, Paris,—A. Klipstein, agent; D. R. Whitney & Co., Boston; Hodges, Coolidge Company, Boston.

Among the machine advertisers appeared a good-sized card from George Crompton, Worcester; Davis & Furber, of North Andover; S. T. Thomas, Boston, advertises an open-shed fancy loom; Harwood & Quincy, 21 Bromfield St., who were then, as their successors are now, liberal advertisers, had a full page advertising the Bramwell and Apperly feeders. L. J. Knowles & Bro. advertised "a new broad fancy loom." James Hunter & Son announced Hunter's improved French rotary fulling mill as being far superior to "Falling Stocks." Cleveland Machine Works advertised cards, spinning jacks and mules. Richard Kitson, of Lowell, announced in a modest advertisement that he built cotton openers and English lappers. L. S. Watson & Co., of Leicester, advertised heddles. T. K. Earle & Co., of Worcester, had a large advertisement in which they announced that they were "outside of all combinations." Johnson & Bassett used to be liberal advertisers in those days, and called attention to their new mule, which they wished the trade to know was not a self-operating jack. An interesting announcement in that of B. F. Sturtevant, 27 Sudbury St., Boston, who advertised "a patent hot-blast apparatus for drying wool, cotton, cloth and hosiery." Fairmount Machine Works, Philadelphia, are represented. Woonsocket Machine Co., of Woonsocket, advertised Paul's patent self-acting woolen mules, also Pike's new rotary fulling mill, besides pulleys, shafting and hangers. M. A. Furbush & Son advertised carding, spinning and woolen machinery. A. Hopkins & Co. advertised themselves as spindle makers and machinists, although they had then begun to build their rotary fulling mill. Parks & Woolson, Springfield, Vt., then, as now, advertised cloth finishing machinery. Curtis & Marble advertised cloth finishing machinery and made a specialty of shears. Boomer & Boschert Press Co. advertised then, as now, their hydraulic presses.

Among card clothing manufacturers advertising were Howard Brothers; D. F. Robinson; W. H. Bagshaw; Woodcock, Knight & Co.; Riehl & Clark, of Philadelphia, advertised themselves as hand loom manufacturers; Jillson & Palmer, Willimantic, Conn., had a new patent cotton opener. Proctor & Lindsay, corner of 12th and Noble Sts., Philadelphia, advertised as manufacturers of burring machinery, machines for opening and cleaning card room waste. E Wright, of Worcester, advertised regulator for water wheels. Tolhurst Machine Works at that time advertised self operators for spinning jacks; J. H. & N. A. Williams, of Utica, heddles; Hertle & Thompson, heddles.

Among bobbin and spool manufacturers then advertising were D. W. Dodge, of Cohoes; Eaton & Ayer, of Nashua; J. S. Jaques & Co., of Lowell; E. Cundey & Bro., of Philadelphia.

Fisher & Hall, Philadelphia, advertised tanks; W. A. Harris, Providence, steam engines; Cheney Bros., silk manufacturers; the Loom Picker Co., Biddeford, Me., now the Garland Mfg. Co., were advertising loom pickers.

Among yarn dealers were Thomas Pray, Jr., Providence; G. Train & Co., of Boston; The Ossawan Yarn & Dye Works, Norwich, Conn.; S. Blaisdell, Jr., & Co.; John Forrest, of the American Yarn Printing Works; L. D. Thayer & Co., of Worcester; Valley Worsted Mills, Providence; American Worsted Co., Woonsocket. Josiah Gates & Sons advertised leather belting, hose and manufacturers' supplies.

These are a few of the names that are more or less familiar to the present generation of

mill men. There are many other concerns who have dropped out of business or whose names have been changed so that they would not be recognized.

In the reading columns of July, 1874, appears the following curious notice, alluding to a publication which we had forgotten ever existed:

"There seems to be no doubt that the American Textile Manufacturer has suspended publication. It was started less than a year ago, and claimed to be more or less—we think, less—a rival publication of our own. It has met its fate; and as we refrained from making any comments upon its contents, and the manner in which it was edited, while it was alive—though the provocation was often strong enough—we do not propose now to decry its memory. There is a moral, however, to the story of its brief existence, and it is this: the textile industry is too narrow a branch to support a second paper devoted to its scientific and technical aspects, especially when the first covers its ground so completely, and, to judge by the support we are receiving, so satisfactorily as ours."

The textile industry has broadened out a good deal in the last thirty years, for at the present time it not only continues to give good support to this publication, but about twenty others besides. Sometimes we think that the field is still a little bit too narrow for so many publications, but the fact that they all manage to exist seems to demonstrate their right for existence, and there is "always room at the top."

KAPOK.

Every year that busy centre of commerce, Amsterdam, receives nearly 1,000 pounds' weight of a curious and interesting vegetable substance known in Java and in the trade as kapok, which is found very useful for stuffing cheap mattresses and pillows, among other purposes. It is a sort of yellow wadding which nature uses as a covering for the seeds of certain trees in the Malaccas. Its fibres being very non-resisting, it has been found impossible to spin or weave it, but it gives excellent results for bedding, making a mattress delightfully soft if it is exposed to the sun before being used. It is exceedingly light and buoyant, in this respect greatly surpassing cork, as it will support in the water 35 times its own weight. The tree whence it is derived (Eriodendron) grows rapidly, and in the second year is 12 to 15 feet high, but it does not fruit abundantly until the fourth year. Like the cotton plant, it bestows two gifts on man, the special wadding mentioned, which lines the husk, and the oil extracted from the seeds, which is used especially in the Chinese markets. The threads of the soft fibre taken from the pods are light yellow, rather silky, and only about an inch in length. They are made into thin rings. Kapok, it is said, never decays. Among the ever-increasing uses to which this curious vegetable product is put—causing the culture of the Eriodendron to make great strides in the Dutch Indies, while efforts are being made to cultivate it in similar climates—it has been suggested that excellent life-saving apparatus might be made from it, which should be in the form of mattresses and cushions, easily obtainable in moments of danger. Three hundred grams of kapok (10 1-2 ounces) will support a man of 10 stone 5 pounds (145 pounds) in the water; and experiments by a French society with articles made of this wadding, which had previously been soaked in water for 18 hours, gave excellent results. One small mattress supported several men. It is probable that soon all ship's beds will be made of kapok.—Chamber's Journal.

[We have obtained samples of kapok and they can be seen at our Boston office.—Ed.]

DHOOTIES.

These are practically shirtings ornamented by stripes of gray, bleached or colored yarn. In the gray variety, the stripes are formed by cramping the ends in the reed, that is, where the ordinary cloth is, the yarn is drawn through the reed two in a dent, and the stripes are formed with three, four, or more threads in each dent. The colored class of this range of cloth is made in stripes of color, varying from 1/2 inch to 4 inches in width. Sometimes these stripes are introduced all the way across the width.

In dobby dhooties the stripes are very often colored and crammed in the reed. It will be understood at once that when a dobby is used, there is a figure being woven, and the utmost capacity of this mechanism is utilized

to produce the effects and combinations necessary to catch the eye of the wearer.

Usually the widths are from 22 inches to 50 inches, and the length of the scarf varying from two yards in the smaller size, to five yards in the larger size. A scarf, of course, is the distance between each heading. As the Hindoo wears this cloth round his loins, and probably it will be tied in such a manner that the headings or border across the width will show, some variety is made in the length and style of this feature. These headings reach up to 20 inches in length at the juncture of the two scarfs. Below is a range which might be mentioned.

22 to 23 in. wide equals 2 yds. scarf.
24 to 25 in. wide equals 2 1/2 yds. scarf.
26 to 28 in. wide equals 3 yds. scarf.
29 to 32 in. wide equals 3 1/2 yds. scarf.
35 in. and upwards wide, equals 4 to 5 yds. scarf.

The yarns employed vary from 30's to 40's in the warp, and 36's to 60's in the weft. They are made up in about 40-yard lengths; thus, a piece 44 inches wide would contain four double scarfs.

India is the recipient of most of the dhooties, while Sarongs go to Java, and Patadiongs to the Philippines.—Indian Textile Journal.

FOREIGN MARKETS FOR AMERICAN COTTON GOODS.

My information and observation encourage the belief that the American trade in cotton goods may be greatly extended throughout the Mediterranean, Red Sea, and Persian Gulf regions. Although the American cotton trade in these markets is now considerable, many of the consuming regions are not reached at all, and the business is limited elsewhere to the operations of a few highly favored houses, whose buyers have established themselves in New York.

The general attitude of the American cotton manufacturers and their selling agents has been unfavorable to the development of the export trade, because of their insistence that their goods be purchased in the United States through exporting brokers, who attend to all the details of shipping and of exchange. In short, American cotton manufacturers do not seem to be organized to do business directly in the consuming markets; they employ no foreign agents, and they have at various times discouraged possible buyers abroad who have initiated correspondence in the hope of obtaining cottons for export in the United States.

The inevitable consequence of this situation is that, aside from a Red Sea trade in unbleached cotton sheetings, our exports to the regions mentioned are exceedingly limited. German and Italian commercial travelers seek the consuming markets, satisfying them to a considerable extent, and in many cases the large buying houses have agencies in Manchester, where their requirements are catered to by British manufacturers. A few important firms buy in New York what they cannot obtain in Manchester, and their demands constitute our export trade in the near east.

Mr. C. I. Zeytoon, of Bushire, Persian Gulf, said to me the other day:

Our English furnishers have been unable thus far to produce a cotton cloth like your unbleached American sheeting, so popular in the Persian Gulf. Therefore these sheetings are bought in the United States.

Mr. Zeytoon was at that moment in Marseille, on his way to Manchester, where his buying house is located. He buys large quantities of gray goods, printed goods, mulls, and T-cloths. This gentleman has never seen an American commercial traveler in Bushire, nor has he ever heard of any American cotton firm, yet he told me that he would be disposed to buy sheetings and T-cloths in large quantities in the United States if he could get into contact with the principal firms and make reasonable terms. The T-cloths are supplied wholly from Manchester at present. Mr. Zeytoon alone could give an order for 30,000 pieces of these goods, each piece 96 yards long, 31 inches wide, and weighing 28 pounds. The pieces are packed in ironed bales of two trusses, each truss containing six pieces. The goods, upon arrival in Persia, are dyed blue by the natives, but if they could be purchased already dyed with indigo they would be preferred in that condition. The Manchester dyed cloths have been unsatisfactory, as indigo dye is not used in Great Britain. If Mr. Zeytoon can obtain these materials in the United States he will

then be glad to suggest other lines, notably of printed goods.

From Bagdad, Messrs. Dumas, Guieu & Co. write to me as follows:

> Our Mr. Dumas has seen at Bagdad importations of cotton sheetings, cheap fabrics, and cotton yarn of American origin. Can you inform us where the centre of manufacture of these articles can be found?

These gentlemen refer as to their standing to the Credit Lyonnais, the Comptoir National d'Escompte, and Chartered Bank of India, Australia, and Canada, of London.

So long ago as 1902, Messrs. Homsy & Fils, of Marseille, informed me that they were large buyers of cotton yarn for the Persian Gulf, which they were then purchasing at Manchester through a London house.

In my lately published reports regarding Abyssinia I have shown that American trade is limited to a class of cotton sheetings, and that responsible firms are not only willing but eager to extend this trade and to buy quantities of other classes of cotton goods if our manufacturers will only take the pains to get into touch with them and to quote them c. i. f. prices. I have before me a letter from a private correspondent in Abyssinia, who says:

> At this moment a German commercial movement manifests itself, and the repeated visits of the Commercial Mission announces it as serious. We must admit the superiority of these people as commercial travelers. . . . The son of Naba Aboubaker said to me the other day: "Since the American sheetings are so reasonable in America, why does no American wish to come here to sell to us? A great fortune would be made quickly." In this country, where the population demand only tangible things, it would be worth more than all the expositions in foreign lands if we had right here a simple supply house.

Our consul at Aden reports that the imports of cotton goods at Aden during the twelve months ended March 31, 1903, amounted to $2,977,553, of which the American share was $1,820,434. No effort was made to obtain the classes of trade represented by the difference between these sums. We were satisfied with what we had. Nor did we endeavor to extend the demand already existing by any systematic effort to increase consumption through the elimination of middlemen's profits.

Our Abyssinian trade is controlled by two foreign firms, Benighn Menaheim, of Aden, and Livierato Freres, of Marseille. Other Abyssinian firms are obliged to buy through these concerns (their competitors) or do without the goods. As these two firms are principally buyers of raw products, chiefly coffee, they hold the exchange value of the cottons up at excessive figures, to the great loss of American manufacturers and of Abyssinian consumers, who would otherwise materially increase their orders. A few years ago Livierato Freres had a Government monopoly of the right to import cotton sheetings into Abyssinia, but the contract has been abrogated and is not likely ever to be renewed. On this subject, Ohannes Assadourian, an honest and reliable merchant, writes to me from Adis-Abeba:

> The American manufacturers have succeeded to such an extent that it is difficult to compete with them with goods from other countries. Unfortunately, however, these goods pass through the hands of big people in Aden, who have their representatives in these countries, and we who are in direct touch with the consumers can not have any of them unless we pay high prices, which, of course, are not the manufacturers' prices, being augmented by profits and commissions. For this reason we can not do any business in articles thus monopolized by these big people.

Messrs. Goolamally M. Mohamedally & Co., of Harar, one of the most active and wealthy firms in Ethiopia, are energetically seeking to buy sheetings direct, and would be glad to procure other cotton goods also. These sheetings must be quoted c. i. f., Jibuti, in hooped bales of 25 pieces, each piece 30 yards long, 37 inches wide, and weighing 9 pounds.

In the Mediterranean, Egypt, Tripoli, Tunis, Algeria, and Morocco require cotton goods, and would buy them in the United States if they were offered upon fair terms. Mr. G. Vadala, of Tripoli, writes to me, saying:

> Will you kindly note that in the Tripolitain we are likewise importers of large quantities of cotton sheetings, of Manchester manufacture, however, as no attempt has yet been made to import into this country similar articles of American production. I permit myself to ask you, therefore, to indicate to me some American houses to whom I might address myself upon this subject. I should be greatly obliged for any information, and trust that practical results will flow therefrom.

In Oran, Algeria, Messrs. T. & D. Hassan, 40 Rue de la Revolution, are similarly desirous of obtaining American connections.

Perhaps the most promising Mediterranean market is that of Melilla, Morocco.

MEXICAN MILLS.

At present the textile trade of Mexico is in a very prosperous condition, mills are running day and night and others are starting up. Mexican cloth finds a ready sale as the wants of the people are known and recognized, and I believe not a single yard is sold for export. The Lancashire of Mexico is situated in a narrow valley in the canton of Orizaba, state of Vera Cruz, about 4,700 feet above the sea level. Clustered within two or three miles of each other and attracted by the magnificent water power which is found everywhere in the rushing mountain torrents, are mills of Rio Blanco, the largest in the country, Nogales, Los Cerritos, Sta. Rosa, Cocolapam, Miraflores and Sta. Gertrudis. The first five are owned by the Compania Industrial de Orizaba, a French company with offices in Mexico city. These are all of one floor construction and cover an enormous area. Cloth is sent from the branch mills to the Rio Blanco factory which, in addition to that of its own manufacture, dyes, prints and finishes all the product of the other mills. This mill has an excellent machine shop, drafting room, etc., equipped with the best tools for textile machinery manufacturing, employing 200 mechanics and 40 molders. The engraving of rolls is carried on in a building specially constructed for that purpose.

Motive power is furnished by electricity produced at a fully equipped power plant on the Rio Blanco river, about five miles from the mills. This plant also supplies the branch mills with power, though each has a turbine of its own in addition.

The company give special quarters to their foremen, who live inside the mill grounds. They have also built a village of considerable size, schools, a church, a theatre and a market place.

POWER PLANT FOR MILL AT RIO BLANCO, MEXICO.

Cocolapam is, I believe, the oldest cotton mill in Mexico, dating back 50 years. It has recently been remodeled and fitted up for weaving. Miraflores, also a cotton mill, is owned by a private firm in Nogales. Santa Gertrudis is a jute mill making bags and carpets. It is owned by the Santa Gertrudis Co. of London, which is at present replacing the original steel structure with one of stone and doubling the capacity of the plant. Power is furnished by electricity generated by turbines on the Rio Blanco river a mile and a half distant. The system of driving is to group the machines so that an 8 h. p. motor will suit

each group, except in the case of the heavier machinery, which has individual motors. Another jute mill has started running about twelve miles from Mexico city and there are also one or two mills making the famous cotton rebosa in the state of Puebla.

CHIHUAHUA.

THE WOOL COMB AND THE WOOL TRADE.

BY S. B. HOLLINGS.

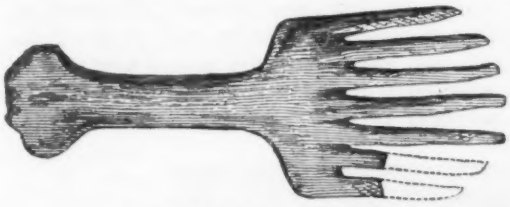
The eyes of the entire wool world are today centred around wool combers and wool combing, great interest being taken in a big law case which is proceeding in London against Bradford's leading wool comber and topmaker. The trial is to settle the question whether or not in 1899 a "cooked" prospectus was issued when thirty-eight woolcombing firms in Bradford resolved to "pool" their interests and form a syndicate. The plan became an accomplished fact, a company being formed and known as the Yorkshire Woolcombers' Association, Limited, the capital being $10,000,000. An action has been brought against some six of the largest vendors on the ground of false statements in the prospectus, the object being to recover some of the money which was paid them as purchase price for their business. Needless to say some of the prices paid were extravagant, and the huge concern had to fail.

A second and epoch making event in connection with the wool combing industry is the present Exhibition which is being held in Bradford, and which over a million people have already attended. It is only right that the whole of West Riding should doff the hat and do homage to a man who "though dead yet speaketh." Overlooking the famous Manningham Mills a palatial building has been erected in Manningham Park in honor of Dr. Edmund Cartwright, the inventor of the woolcombing machine and the power loom. Though Cartwright joined the majority over 100 years ago, still "his works do follow him." The Cartwright Memorial Hall recently opened by the Prince and Princess of Wales will always stand as a monument to that man of genius, still I cannot help but think that a more befitting monument to Cartwright is the present big wool and worsted trade of Bradford. As Lord Masham said the other day, "if there had been no Cartwright there would have been no Bradford," and he is right. Not even Cartwright himself could have had the fainiest idea that his invention of the wool comb would be the direct means of building up a trade which has continued to expand ever since.

Bradford is the largest centre of wool consumption in the entire world. It is almost beyond human power to form a correct estimate of the value of Bradford's wool trade, and as to how much there is consumed daily in the various departments from the wool comb to the finished fabric. I do not think that Bradford business men have realized till recently the importance of the local wool trade, and that what is being done daily in the woolcombing sheds of Worstedopolis is telling on the Australian sheep station, the Karoo of South Africa, and on the estancias of the River Plate. For once at least the wool trade has commanded royal patronage, and it was only right that Bradford should be selected as the home of the industry and the birthplace of some of its most important inventions which have revolutionized the wool and textile trades of the entire world. It may fairly be said that what Bradford does not know about the wool trade is not worth knowing, and the wool and textile exhibition which is now being held in Cartwright's Memorial Hall forms a fitting event to the close of another man's career whose name must always be inseparable from the woolcombing machine, namely, Lord Masham, the founder of the famous Manningham Mills.

I put the question the other day to two well-known Bradford wool staplers if they thought the wool trade in general would ever have been important if the mechanical woolcomb had not been invented, and we all three agreed that the art and science of woolcombing has been the greatest blessing that has ever come to the wool trade of the world. It goes without saying that woolcombing by

machine has placed certain yarns in the hands of manufacturers and enabled them to turn out certain fabrics which could never have been made out of the old hand combed wools. If nothing more had resulted out of Cartwright's invention than the mere establishment of a new principle, lasting good would have resulted to the wool trade in general.



AN OLD BONE HAND COMB.

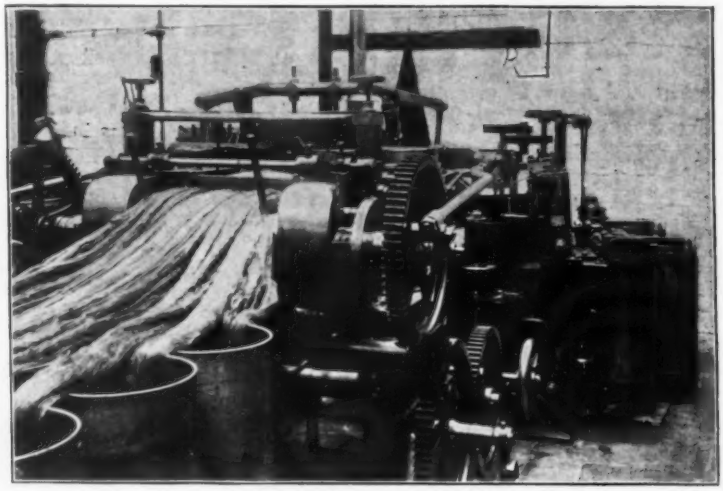
It is common knowledge that the early inventions of all textile machinery were bitterly opposed by the textile workers, and none more so than that of the woolcombing machine. Men in those days could not see that an increased production was of material benefit to the general public in creating an increased demand on account of lessened cost, but in these days men welcome any development in machinery which in dispensing with hand labor produces better goods at lower prices. Neither Cartwright, Lister, Holden, Donisthorpe, or Heilmann ever dreamt that their valuable additions to the art of woolcombing would have such a powerful effect both on the productive and consumptive capacity of the world as is seen today. The Australian squatter has as much right to grow enthusiastic over the wool comb as Bradford has been this last few weeks. The wool comb lays at the very bottom of Bradford's progress, while every person in the world is today vastly better off because of the exquisite fabrics which are now available, and which are first of all shaped on the woolcomb.

The first mill in Bradford was erected in 1798, and driven by steam power, a fifteen horse engine having been introduced in 1800. In 1795 the population of Bradford numbered about 8,000, the majority of whom found employment in their own homes at hand-combing with the old bone and wood combs, some at the spinning jenny, and many more at hand loom weaving. In those days all the burrs, seeds, and "moits" had to be picked out by hand, the wage being regulated at so much per stone, and at its best it was a very tedious job.

In 1794 at the Old Piece Hall something like 2,000 pieces were offered weekly for sale, these pieces being the product of hand-looms. In those days it took a man one week of 54 hours to weave about thirty yards of cloth, but the modern power loom produces on the average about 200 yards of dress goods or linings in one week of 54 hours. The number of power looms in Bradford and district is estimated today at about 100,000 capable of producing over 20,000,000 yards of woven fabric per week, equal to 400,000 pieces of fifty yards each and offering a great contrast to the 2,000 pieces produced weekly in 1794 to 1800. The first power loom introduced in Bradford was in 1826, and this innovation has revolutionized the entire wool industry. Of all the modern inventions that of weaving the remarkable figured fancies which are to be seen today in almost every shop window ranks as one of the triumphs of the nineteenth century, and so perfect has the power loom become, and so important an adjunct to the wool trade of the world, that its true significance cannot be over estimated. At the same time it should never be forgotten that before we can have the finished article we must have the work of the wool comb, and it is here that its value as a reforming agent comes in.

At the beginning of the nineteenth century the wool manufacturers of Bradford had already begun to show considerable enterprise, and before many years had passed the products of the city were assuming considerable dimensions. In 1827 Cartwright produced the first set of combs to work by machinery, but not until many years after could it be pronounced a success, as it required considerable hand power to render the "sliver" workable. At that time home grown wools constituted the sole qualities which Bradford staplers had to deal with, and length of staple was the sine qua non of the trade. No matter what the quality of the wool was, if the staple was not a good length an old Bradford

stapler shook his head very meaningly and said it could not be combed. I have heard it said by old staplers who now lie in their coffins that of the many lots of short wool, and equal in length to the present Australian merino wool, scores of bales were rejected because the fibres were too short to be combed. In many instances the "cloathmakers" of the outside country districts round Rawdon, Yeadon, Horsforth, Calverley, Farsley, etc., operating from one to three looms in their own homes, would visit Bradford and buy these "shorts" at a very reasonable price indeed. With the advancement and development of combing machinery Bradford has stepped forward at an amazing speed, and while the genesis of the modern factory had its inception at the beginning of the last century, it must be said it was not until the middle of the century that it was out of the experimental stage.



A LISTER WOOL COMB.

In 1842 there took place what is known as the plug riots. So infuriated were the people at what machinery was doing both in combing, spinning, and weaving, that boiler plugs were drawn out forcibly to prevent steam from being used and the machinery from being run. The people were maddened at the prospects of work being done at the mills. That was a mistaken policy, such actions being founded entirely o

In 1847 Bradford was incorporated, and became recognized as a town. The Chamber of Commerce was formed in 1851. It is now a body both of magnitude and importance, every department of the wool trade being cut up into sections, there being wool, yarn, piece, and dyers' sections. Any trouble arising under each separate head is dealt with in particular by that one section. The new exchange was completed in 1867, it also being enlarged about six years ago to meet the accommodation of its increasing number of patrons. The estimated annual production of Bradford goods, taking the average for the past ten years, may be put down at about $320,000,000.

The trade of Bradford is essentially one catering to the wants of the gentler sex. Just as New South Wales wool is a household word with 75 per cent. of Bradford's population, so the dress goods of Worstedopolis are known the wide world over as being the best produced. Until thirty years ago Bradford manufacturers produced nothing that may be called men's wear fabrics, her products being entirely for ladies. Some shrewd manufacturer produced then the elegant worsted coating, which at that time did a great deal for Australian merino wools, causing good prices to be paid. Ever since that time this has been regarded as one of

Bradford's staple products, and during recent years it has been augmented by the production of fancy worsted trouserings, vicunas, etc., all of which require large quantities of merino wool. In the first process of manufacture the functions of the wool comb have to be called into use, and as a changing factor or revolutionizing agent it is impossible to speak too highly. Bradford's present position as the first wool consuming centre in all the world stands on the combing machine, and it is destined to influence for good even the work of pastoralists as much as manufacturers.

THE ADVANTAGES OF SHORT TIME.

There are yet many persons who fail to see the advantages to be derived from working short time. The plan of curtailing hours is certainly not always beneficial, but, as has been recently proved by the Federation of Master Cotton Spinners' Associations, as an antidote for high prices of raw material or low prices of the finished product it is the best yet discovered.

If it had not been for the prompt and combined action of the association this year and last, the users of American cotton in this country would at present have been in a very unenviable position. In fact, cotton spinners throughout the world would have felt the strain, for the members of the association not only saved themselves, but others, from industrial and perhaps financial disaster. The last two years have been trying ones, but prices have been kept within bounds, wages have been maintained, and stocks have been prevented from accumulating.

The Bolton spinners who are at present contemplating combined action of a like nature are scarcely to be admired. That contemplation should be necessary, that doubt on the point of unanimity should exist, shows that there are spinners of fine counts who are careless of the benefit to the many, and regardless of anything but their own isolated interests. Combination cannot also be beneficial to everyone concerned, but it is not always the same parties that suffer, for the term of benefit eventually comes round to all.

The present deplorable strike in Fall River, where the action of the employers will not bear too close investigation, might have been avoided by combined short time throughout the States; but spinners in the Southern States worked night and day at a time when the raw material was scarce and the manufactured product not required. Even if the Southern spinners had considered the condition of trade and worked reasonable hours, they would probably not have suffered, for as it was they were only affecting prices in a manner adverse to their own interests and those of more thoughtful competitors.

Another example of a suicidal nature may be found in the methods of the Spanish cotton spinners and manufacturers. Their industry is at the present time suffering from over-production, not so much due to the general state of trade as to the loss of their privileged outlets—their colonies. Instead of running short time, the Cotton Spinners' Association of Barcelona has decided to indulge in a combined sacrifice and to export 20 per cent. of their surplus yarn at a loss of 10 per cent. on the cost.

Germany and Italy once cleaned their slate by this process, but both suffered, and in the former country the textile industry was for many months on the verge of bankruptcy. To meet such a loss the workpeople must be bled, and their natural objection to the proceeding causes troubles of another nature. To suffer such a loss means that someone gains the difference; but as that someone is usually a middleman, and most likely a middleman in another country, the money is lost to the industry, and perhaps also to the country.

It is almost safe to predict that a few years hence the sacrifice of stocks and the lowering of wages, except on a scale which slides both ways, will be looked upon as not only showing an absence of economy, but as proving the scarcity of common sense on the part of the directors or managers taking such courses. Short time is bad enough for both employers and employed, but by it the former saves wear and tear in his machinery, and the latter has a little more time in which to effect domestic economies, and so counterbalance the loss of wages. Bad trade means a loss to everybody and short time is most certainly the easiest and pleasantest way of facing the trouble.—Textile Manufacturer.

The Australian Wool Trade.

To the late Richard Goldsbrough, founder of the present firm of Goldsbrough, Mort & Co., Ltd., of Melbourne, Sydney, Rockhampton and London, belongs the honor of establishing the Australian wool trade, the realizing medium of the greatest industry of that country.

Mr. Goldsbrough served an apprenticeship in a woolen mill at Bradford, and left that center for Australia in 1847, and in 1848 was took in as partners several of those associated with him, when the firm was styled R. Goldsbrough & Company. In 1881 the firm was amalgamated with the Australasian Agency & Banking Corporation, a kindred institution, which had been established in Melbourne some years, and this amalgamation rendered the business a limited liability company with a capital of £3,000,000 in 300,000 shares of £10 each. At this time operations

VIEW OF SIDNEY HARBOR, GOLDSBROUGH, MORT & CO.'S WAREHOUSE IS THE LARGE BUILDING WITH GABLE FRONT AT THE RIGHT.

engaged in business, embracing stock and station agency and wool scouring at Melbourne—then a small town in the young Australia—when he conceived the idea of establishing auction sales of wool locally. Until then all wool from Australia had been marketed in London, being shipped thereto by the slow sailing ships of the period, and sheep farmers had to wait many months before ascertaining the fate of their produce and receiving the proceeds thereof.

The start was a modest one, but the business made rapid growth, and assumed large dimensions, and in 1857 Mr. Goldsbrough had been extended to Sydney, where magnificent premises were erected close to rail and wharves, and the business continued to expand. In 1888 a further amalgamation was made with Mort & Co., Ltd., of Sydney, absorbing that well established business; the company then formed, bearing the title of Goldsbrough, Mort & Co., Ltd., with a nominal capital of £6, 000,000. In 1889 the company handled 178,454 bales out of a total of 1,190,480 produced and 568,170 bales sold in Australia.

The progress of the trade in Australia may be realized when it is stated that in 22 years—

from 1881, in which year 197,000 bales, representing 29 per cent. of Australia's production, were sold in Australia (the balance having been sold in London); to 1903, when 748,000 were sold in Australia, representing 76 1/2 per cent, leaving London only 23 1/2 per cent. to sell on behalf of Australian growers.

OFFICES AND WAREHOUSES OF GOLDSBROUGH, MORT & CO. AT MELBOURNE.

OFFICES AND WAREHOUSES OF GOLDSBROUGH, MORT & CO. AT SIDNEY.

Bales on an average contain about 350 pounds.

The record maximum production of wool in Australia was reached in 1895, when 1,590,400 bales were exported, and of which 804,500 bales were sold in Australia—a full 50 per cent. Since 1895 and until recently the greater part of Australia has suffered from the most serious and prolonged drought in its history, the production of wool having fallen to 975,000 bales, or a reduction of fully 620,000 bales, compared with the record.

throughout of blue stone. The top floors of each building are specially arranged for light, and sample bales of all wool offered for sale are shown thereon, the bulk being available for quick inspection on the lower floors.

The conduct of the Australian wool trade gives satisfaction to all concerned, and the brokers are always keen to adopt improvements for giving buyers greater facilities for their work, or securing to growers full value for their produce. Fixed percentages of clips are exhibited in the show room, as given

BUYERS EXAMINING SAMPLE BALES OF AUSTRALIAN WOOL.

About 30 selling brokers' firms are now engaged in the wool business in Australia, the principal centres at which regular auction sales are held during the season being Sydney, Melbourne and Adelaide. The selling season proper starts in September and lasts to the end of February. During that period, with the exception of the Christmas vacation, sales are held five days weekly. Throughout the winter months small sales are held, but they are not important.

An enormous amount of money is represented in the Australian premises for the conduct of wool business. We show photographs of Goldsbrough, Mort & Co.'s buildings, which contain an aggregate area of storage room of 14 acres, and are built

in accompanying tables, and as balance of clips are stored on floors below, the bulk is always easily accessible for checking.

SHOWING OF WOOL.

The followig table, which was prepared by the buyers' association after the conference held on the 26th of October, 1900, was accepted by the sellers as representing substantially what they had agreed to:—

Farmers' and spade-packed and badly classed crossbred lots up to 15 bales, all to be shown, alternately bottom up:—

	Station Crossbred Clips.	Station Merino Clips.
75 bale lots—	13 to be shown.	11 to be shown
50 bale lots—	12 to be shown.	10 to be shown,
25 bale lots—	9 to be shown.	7 to be shown.

15 bale lots—	8 to be shown.	6 to be shown.
10 bale lots—	6 to be shown.	5 to be shown.
5 bale lots—	4 to be shown.	3 to be shown.
2 bale lots—	2 to be shown.	2 to be shown.

Shown bales are stood on end, and top of bale cut completely back, so that buyers can make an exhaustive examination for purpose of valuations.

Wool is ready for inspection from early morning until 3 P. M., when sale is held in Central Wool Exchange; after sale sample bales are repacked to original weight, sewn up neatly, and repressed in hydraulic presses.

For wool intended for resale in America the Australian handling is in favorable contrast to that of London, where the bales after sale are patched in an unsightly manner, presenting an unmerchantable appearance.

Now that the selling market for Australian wool has been practically moved from London to Australia (the local sales, as we have shown, having reached over 75 per cent. of the commonwealth's production), there is no question that buyers desiring to avail themselves of a large range of wools must go to the local market. At present, of the wool sold, three-fourths goes direct to the manufactories in countries other than England, so that no other market can possibly offer the same assortment of Australian wools as the local one.

MISNOMERS IN THE TOP TRADE.

Are we to add to our list of commercial fictions the denomination of Bradford tops? The symbols "60's" and "40's" applied to wool had their obvious origin in spinning capacity of the raw material; and there was a time, within man's memory, when sixties were sixties, as much as thirty-six inches are still a yard. Perhaps these numerical good manners have been corrupted by evil communications; certain it is, at any rate, that between tops of the same number there is a wide discrepancy. Forties in name are not necessarily forties in fact; indeed it becomes common to hear the depreciatory remark that conventional Bradford forties are spinners' thirty-twos. Something depends of course, on the view-point of the speaker; supposing him to be a producer of famous yarn, he will be careful to avoid material that is not good for a considerably finer spin than he definitely requires. In that case he will be unlikely enough to carry 60's material beyond 48's in yarn, and 40's higher than 32 hanks to the pound. But outside of this perfectly comprehensible position there is still room for doubt and suspicion. One may question earnestly whether, in the case of the typical Bradford top, the material to which the day's price is affixed be positively spinnable to its nominal length by a not over-exacting spinner, but simply by one who expects passably good results. As long as all parties are aware of the fact that forties are not actually forties any more, it may be contended that no harm is done. But as, on the other hand, no good comes by a divorce of names from things they are supposed to represent, it might be as well to get back to the old practice of calling a spade a spade. The whole purpose of a name is to distinguish a thing clearly, and the misuse of names leads primarily to some misunderstandings, and eventually to chaos and confusion. Inches and ounces are useful by virtue of their fixity. If they were factors variable at will, their utility and title to respect must leave them. Though spinning numbers come eventually to the test of these units, there appears to be small enough excuse for any departure from the just ratio that numbers ought always to bear. Trade is so full of anomalies already that new ones ought carefully to be avoided, in the hope that at some day business—by the elimination of all non-essentials—will be made very much easier to do.—Textile Mercury.

The double silk fibre as it exists in the cocoon is known as the bave; the single filaments are called brins.

Floss or chappe silk is the irregularly spun and tangled silk on the outside of the cocoon. It comprises from 25 to 30 per cent. of the entire cocoon and is valuable for its purity and fine quality. The better quality is worked up into florette silk, while the shorter fibres are carded and spun into bourette silk.

WHY TEXTILE GOODS SHOULD BE ADVERTISED.

This is the ninth of a series of papers upon textile advertising by Thomas Balmer, advertising manager of the three publications of the Butterick Publishing Company—The Delineator, The Designer and the New Idea.

1. Necessity and possibilities of textile advertising.
2. Naming and trade-marking textile goods.
3. Planning the advertising campaign.
4. General publicity and work upon dealers.
5. Actual experience of manufacturers whose advertising has been successful.
6. Brief comment upon six different lines which will then be discussed, one at a time, in the six following papers based upon actual statistics collected at an expense of thousands of dollars and an equal value for the time demanded for their collection.

When that time comes in which manufacturers so respect the integrity of their products that they will not allow them to leave their mills without trade-marking them, so that enthusiastic users may identify them and recognize them the world over, then will underwear not only be fully identified, but the yarn from which it is woven, the silk or silicia with which it is faced, and the very buttons themselves will be trade-marked.

The idea of the textile campaign is to go back to the fountainhead—the man who makes the fabric. Underwear, however, is generally manufactured from start to finish in one mill.

There is probably no one article of human wearing apparel which is so widely and universally bought, and which is so seldom identified by a trade-mark.

The manufacturers who are far-seeing enough to prefer their own names and trade-marks upon their goods to those of the distributors are but few when compared with the great mass of unidentified underwear to be bought in any store, some of which is as good as such things can be made. The underwear that is advertised is usually some patented variety, something unusual in the construction, as Jaeger, Aertex, Cellular, and other novelties. Comparatively few people wear these. The great mass of mankind wears cotton, cotton and wool, all wool or silk underwear, taking the word of the dealer for its quality, picking it out afresh each year from memory, without a single name or trade-mark to guide them.

Apply this to your own self. Where and how do you buy your underwear? What is the name of it? If your last outfit was satisfactory, do you know what it is called? Could you ask for it again in a strange store? Would it not be a convenience to you if, having found underwear that suited you in every respect you could always ask for that underwear by a given name, and be sure of getting it?

Among the advertisers of underwear whose underwear is best known are a number of jobbers who do not make their own underwear, who do not even secure all of it from one maker.

It often happens that a manufacturer who gradually gives up his entire product to a jobber, who gives it a trade-mark and advertises it, and who, finding it impossible to comply with the increasing demands of the jobber in the way of price and quality, is forced to lose the customer and his entire business because that name and trade-mark belong to the jobber.

If a man is capable of turning out good underwear in his mill, the best that can be had, he is entitled to the credit himself, and to all the publicity that can be built upon that underwear. Yet how many of these manufacturers are there who sit down calmly, under these conditions, and watch jobbers or other manufacturers build up business by so simple and logical a method as stamping their brand upon the goods and advertising them, and still have not the conviction or the courage, or the energy to do the same thing themselves? If they do not owe this to themselves, they certainly owe it to the people who have been wearing their underwear for years, and who are helpless in their efforts to obtain the same goods.

There can be bought in most stores French balbriggan underwear which may or may not be real French balbriggan, but which is certainly good underwear. The name "French Balbriggan" covers a multitude of sins. Some of it is good; some of it is not. Who makes the good and who makes the bad? How can the purchaser tell them apart? Where is the manufacturer who is turning out a high-grade

balbriggan which is being worn by men and women all over the country, and who is so shy, so modest and so reticent that the people who wish to wear his goods are compelled to take a sample of their last year's garments with them in order to make it easy for them to get the same goods, and that when these people are compelled to go to another store even the remote possibility of getting the right goods is gone?

Yet the writer knows of a number of people who are so anxious to obtain this same underwear that they go to this amount of trouble every year or every time they buy. They are working harder in the manufacturer's interets than he is willing to work in his own interests.

And what is the answer of the manufacturer to these arguments? The answer is so childish, so futile and so ridiculous that if any other sane business man gave it, this manufacturer would laugh. His real argument is that if he should make all these changes, he would have to hire a bookkeeper and a stenographer. This is an absolute fact. A proposition was made to one of the largest manufacturers of underwear in the country and one of the best. His goods are standard. He is one of the manufacturers who are supplying several jobbers with goods to be marked with the jobbers' own trade marks, and his answer to the advertising proposition is that he practically has only one account, that that account is with a large house, that he has no bookkeeper and no stenographer, no office force, but that if he started in to advertise his own goods it would necessitate an entirely different system.

"Why," he said, "it would revolutionize my business."

This reminds me of a story that used to be current in western towns when I was a boy. It seems that there was an old town character who was so lazy that his fellow citizens got tired of seeing him around, so they decided to bury him. The victim did not make even a passive resistance. They put him in a coffin and started for the cemetery. A visitor in the town, attracted by the unusual sight, asked for the circumstances. On being told that they were going to bury the man because he was too lazy to earn a living, he replied that he was willing to contribute a bushel of corn to the man's support if they would give him another trial. The man raised the lid of the coffin a few inches and inquired:

"Is the corn shelled?"

"No," replied his astonished benefactor.

"Drive on," said the lazy man to the driver.

This story is suggested by the absolute listlessness on the part of men who are building up immense businesses which can be swept away by a turn of the hand, for lack of so simple a precaution as advertising, simply because that advertising involves a little labor on their part.

Another large manufacturer was persuaded to start upon a preliminary campaign so good that there was no question that it must be bringing results. The advertising agent called upon his customer after the first advertising had gone out to find out about results. He asked the manufacturer what had happened. The manufacturer replied:

"Nothing."

The agent seemed surprised that there had been no results and asked if he had heard from it at all. The manufacturer said:

"Oh yes! I have heard from it," and he pulled open a drawer filled with letters. "Here," he said, "we got all these letters and they are a terrible nuisance. Nobody around this place has time to answer them, so we stuck them in a drawer and let them go."

The tables following this article show a very indifferent state of affairs. They show that very few people ask for underwear by name; that very few of them ask for advertised brands; that still fewer ask for these brands because they are advertised; that there is no one brand of underwear that stands out as it does in the case of other lines of goods where an article has been thoroughly advertised. They show that underwear is among the most anonymous goods that are sold. They show that hundreds of manufacturers are making good underwear which is unbranded, unadvertised, unasked for and unsold.

Yet here we are, seventy-five million people, nearly all of whom wear some kind of underwear the year around, and no one manufacturer has risen to the opportunity of placing underwear upon at least as high a plane as breakfast foods or corsets.

When you come down to it, why should a

corset manufacturer advertise more than an underwear manufacturer? Yet it is true that the corset people do advertise more. Each makes an article of necessary wearing apparel, an article which to make successfully and well requires considerable ability, an article on which there is a chance to exercise a wide range of taste, an article upon the excellence of which depends so much of our every-day comfort. Still through trade conditions and traditions which seem as fixed and immutable as the laws of the Medes and Persians, underwear is not advertised in any really large sense simply because it has not been the custom to do so. There is no other reason. There is not a single obstacle in the way that cannot be swept away. The real reason is that these houses are headed by men who have grown gray in the business—men who for half a century have been manufacturing a product of which they are proud, which they have sold for this half a century under the old trade conditions, and who do not believe to day that there has been any change in the commercial world. They have not recognized this new, modern method of conducting business. They think old ways are best simply because they are old. They are letting glorious opportunities pass them every day, and some of them will live to see young competitors grow up and build up larger businesses than their own in one-tenth the time, on goods no better, if as good, by availing themselves of the modern selling plan which always includes good advertising.

Nothing is more certain than that this underwear tangle proves that only 22 per cent. of the women who ask for a specific make of underwear for women obtain it.

It may be urged that this is almost purely a local investigation. That is true, but it was made in a range of stores that include almost all classes of buyers of such underwear as should, or could, be advertised either as to quality or price, as would make it desirable to advertise them, and consequently, may be considered a fair reflection of the purchasing condition.

I have a table compiled that shows out of 6,000 women who are asked to answer the question: "What brand of knitted underwear do you buy and whether union or twopiece, and whether woolens, cotton, silk, or silk and wool, etc.," the figures tabulated from the answers received show approximately in round figures the following:

A little more than half the women answering the questions say they wear union suits. The proportion is 53 1-3 per cent. Of that number less than one-third mention a brand or make, and of the one-third that mention a make five-sixths mention makes that have been advertised in The Delineator. Of those buying two-piece suits less than one-seventh mention a make, and nearly two-thirds of the makes mentioned are those which have been advertised in The Delineator. There are almost twice as many women buying cotton underwear as compared with wool, and more than 200 women say that they wear silk underwear and less than one-fourth of the silk underwear mentioned are mentioned by brands; more than three-quarters of all the brands mentioned are brands advertised in The Delineator.

Incidently, I would state that such evidence as is before me would indicate that there are more than 30,000 women in the million homes in which The Delineator goes who are wearing all silk underwear. In view of the statement not more than one-quarter mention the brand of underwear they wear, it should be clear to any one's mind that here is an opportunity for some advertiser to sell the not less than 22,000 women some brand of silk underwear, if it was properly advertised.

This article applies to all knitted underwear that is not sold, only in a more or less degree, according to the figures I have given here, so that I feel justified in saying that while 22 per cent. shown in the tabulation above all that are known brands obtained in the store and asked for entirely have a very large market, and the woman being able to get almost anything she wants in New York shows even a more favorable condition than the general average conditions that govern anywhere all over the United States, if the answers I have obtained from 6,000 women, volunteering the information in reply to the questions asked in the first six pages of the July number of The Delineator are of any value. I insist that they are of incontestable value as a true reflection of the actual conditions that these women tell, regarding their purchase of goods they wear.

THOMAS BALMER.

UNDERWEAR.

1. WHAT SHE ASKED FOR.	No. of customers.	2. For what purpose?							3. Why did she ask for it?																				4. What did you sell her?					5.	6. Why did you not sell?								
		Did not say	Own wear	To wear under thin skirt	To match corsets	Riding	Corset cover	TOTAL	Did not say	Stainless	Previous purchase satisfactory	Fast colors	Would not unravel	Good fit	Prevents cold	Well made	Low neck and long sleeves	Large bust and hips	Soft	Price reasonable	Liked brand	Tight fit	Quality	Wears well	Does not stretch	TOTAL	Own make	Same as she asked for	Imported French	Imported Swiss	Sold nothing	TOTAL	For detailed analysis see following page.	Did not say	Too coarse	Did not have	Could not guarantee	Color did not suit	Had nothing she liked	Too expensive	TOTAL
Swan wool	2	..	2	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	..	1	..	..	..	1		..	..	1	..	..	..	..	1
" silk	1	1	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1		..	..	..	..	..	..	..	..	..
" " (union)	2	..	1	..	..	1	..	2	..	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	..	1	..	..	..		..	..	..	..	..	..	..	..	..
" " tights	1	1	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	..	1	..	..	..		..	..	..	..	..	..	..	..	..
" " vest	4	..	3	..	..	..	1	4	..	..	..	..	..	..	..	..	..	..	..	..	2	1	..	..	..	3	..	3	..	..	..		..	..	..	..	..	..	..	..	..
" lisle	2	1	1	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..		..	..	..	..	..	..	..	..	..
" " vest	3	2	1	..	..	..	..	3	2	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..	3	..	3	..	..	1		..	..	1	..	..	..	..	..	1
" vest	2	2	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..		..	..	..	..	..	..	..	..	..
" " (high neck)	1	..	..	1	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	..		..	..	..	..	..	..	..	..	..
New Brunswick (union)	1	..	1	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	..	1	..	..	..		..	..	..	..	..	..	..	..	..
" " lisle	2	..	2	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	2	..	1	..	..	..		..	..	1	..	..	..	..	..	1
" " " (union)	1	..	1	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	..	1	..	..	..		..	..	..	..	..	..	..	..	..
" " " vest	1	1	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	..		..	..	..	..	..	..	..	..	..
" " " tights	1	..	1	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	..	1	..	..	..		..	..	..	..	..	..	..	..	..
" " silk vest	1	..	1	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..		..	..	..	..	..	..	..	..	..
Silk	5	2	2	..	..	..	1	5	3	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	5	1	..	..	4	5		..	..	1	..	..	..	1	4
" tights	4	2	1	..	1	..	..	4	2	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	4	..	..	1	3	4		..	..	1	..	..	..	1	3
" " (Imp. Swiss)	1	1	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1		..	..	..	..	..	..	..	..	..
" vest (ribbed)	1	..	1	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	1		..	..	..	..	..	..	..	..	..
" vest	6	3	2	..	..	1	..	6	6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	6	3	..	..	2	1	6		..	..	..	..	..	..	..	..	..
Lisle	15	7	8	..	..	..	..	15	9	..	2	..	..	..	..	1	..	..	1	..	..	1	..	..	1	15	7	..	..	..	8	15		4	1	2	1	..	..	..	8
" (union)	2	..	2	..	..	..	..	2	..	..	1	..	..	..	..	..	..	..	1	..	2	..	..	..	..	2	1	..	..	..	1	2		..	..	1	..	..	..	..	1	2
" vest	11	7	3	..	..	..	1	11	7	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	11	5	..	..	..	6	11		4	..	..	2	..	..	..	6
" drawers	2	1	1	..	..	..	..	2	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	2	..	..	..	..	2		..	..	..	..	..	..	..	..	..
" tights	1	1	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	1		..	..	..	..	..	..	..	..	..
" (unbleached)	1	..	1	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	1	..	..	..	..	1		..	..	..	..	..	..	..	..	..
Cotton	3	2	1	..	..	..	..	3	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	2	..	..	1	3	3		..	..	1	..	..	..	..	1	1
" vest	5	2	2	..	1	..	..	5	2	..	..	..	..	..	..	..	..	1	..	2	..	..	..	..	..	5	4	..	..	1	5	5		..	..	..	..	..	..	..	..	..
" " (high neck)	1	..	..	1	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	1	1		..	..	..	..	..	..	..	..	..
" drawers	1	1	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	1	1		..	..	..	..	..	..	..	..	..
" (union)	1	..	1	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	1	..	..	..	1	1		..	..	1	..	..	..	..	1	1
" and lisle vest	1	1	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	1	1		..	..	..	..	..	..	..	..	..
Drawers	2	1	1	..	..	..	..	2	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	2	..	..	..	2	2		..	..	..	..	..	..	..	..	..
Vest	5	5	..	..	..	..	..	5	5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	5	3	..	..	2	5	5		1	..	..	..	..	..	1	..	2
Union suit	1	1	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	1	1		..	..	..	..	..	..	1	..	1
High-neck vest	2	1	..	..	..	..	1	2	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	2	2	2		..	..	1	..	..	..	1	..	2
Ypsilanti silk vest	1	..	1	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	1	..	..	..	1	1		..	..	..	..	..	..	..	..	..
Ribbed vest	1	1	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	1	1		..	..	..	..	..	1	..	..	1
" " unbleached	1	..	1	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	1		..	..	..	1	..	..	..	..	1
Medicated wool	1	..	1	..	..	..	..	1	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..		..	..	..	..	..	..	..	..	..
Total	100	47	43	4	1	1	4	100	55	2	4	1	1	1	2	2	1	2	4	6	14	2	1	1	1	100	37	22	3	1	37	100		13	2	12	3	1	1	5	37

4. WHAT DID YOU SELL HER? (*Repeated, see foregoing page.*)		5. Why did you sell it?																
		Did not say	Good and cheap	Good quality	Best quality	She always wears our goods	Liked them	Wanted them	Sell own goods if possible	Price suited	Soft	Washes well	Last purchase was satisfactory	Wears well	Sold nothing	Total	TOTAL
Own Make	Silk			1												1	
	" vest ribbed									1						1	
	" vest			2	1											3	
	Lisle		2	1			4									7	
	" (union)	1														1	
	" vest	1	2				1							1		5	
	" drawers					1			1							2	
	" tights								1							1	
	" (unbleached)											1				1	37
	Cotton	1							1							2	
	" vest		2								2					4	
	" " (high neck)												1			1	
	" drawers		1													1	
	" (union)		1													1	
	Drawers						1			1						2	
	Vest					1	1		1							3	
	" ribbed		1													1	
Same as she asked for	Swan wool							1								1	
	" silk							1								1	
	" " (union)							2								2	
	" " tights							1								1	
	" " vest							4								4	
	" lisle							2								2	
	" " vest							3								3	
	" vest							1								1	22
	" " (high neck)							1								1	
	New Brunswick (union)							1								1	
	" " lisle							1								1	
	" " " vest							1								1	
	" " " tights							1								1	
	" " silk vest							1								1	
	Imported Swiss silk tights							1								1	
Imp. French	Silk tights				1											1	3
	" vest				2											2	
Imp. Swiss silk vest					1												1
Nothing															37		37
Total		3	9	4	5	2	7	22	4	2	2	1	1	1	37	—	100

SUMMARY.

MATERIAL.	Swan	New Brunswick	Silk	Lisle	Cotton	Drawers	Vest	Vest Ribbed	Imported French	Imported Swiss	Total
Sold when asked for	16	5	6	17	9	2	3	1	.....	.....	59
Sold when not asked for	.....	.....	.....	.....	.....	.....	.....	.....	3	1	4
Total	16	5	6	17	9	2	3	1	3	1	63

Number of customers who bought	63
Number of customers who did not buy	37
Total number of customers	100

TEXTILE PROCESSES.

EDITED BY E. A. POSSELT.

PRACTICAL POINTS ON JACQUARD WORK.

DESIGNING, WEAVING AND CARDSTAMPING FOR FABRICS CONSTRUCTED WITH TWO SYSTEMS OF WARP AND ONE SYSTEM OF FILLING,

the fabric showing twill effects, the warp to form face and back of fabric, the filling resting embedded, not visible, in the body of the fabric.

For explaining this system of designing we selected a coarse textured rep-drapery or curtain fabric having a prominent twill ef-

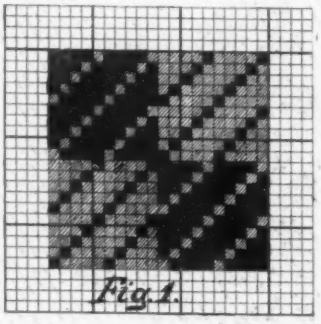


Fig. 1.

fect all over ground and figure. Besides this twill effect, and the filling being a stuffer, not visible on face or back, another feature is that the fabric is reversible, i. e., the fabric having

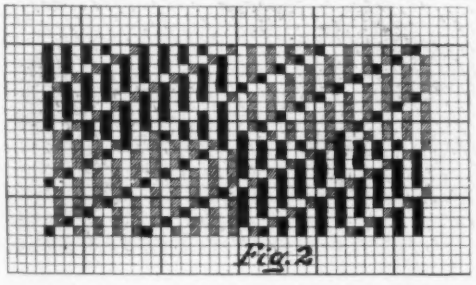


Fig. 2.

a double face, each representing a counter part of the pattern of the other, the two systems of warp exchanging positions (face or back or vice versa) in order to produce either ground or figure, the weave (exchange) for both systems of warp being arranged to occur on the same pick in order to completely hide the filling.

In order to make matters positively clear

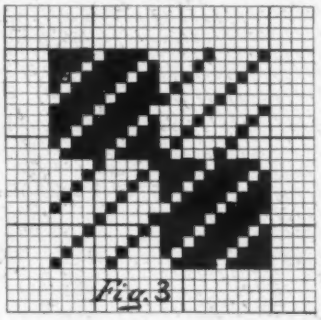


Fig. 3.

to the student the accompanying four diagrams 1, 2, 3, and 4 are given.

Diagram 1 shows the design executed on point paper in two colors, viz.: ■ and ▨, each type standing for one color of the warp, the filling not being visible on face and back. For weave we selected the $^{1}/_{4}$ and $_{1}/^{4}$

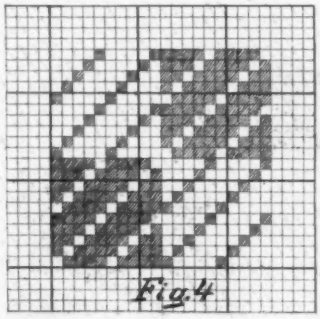


Fig. 4.

5-harness twill—one twill line running into the other.

Diagram 2 shows the analysis how the fabric interlaces, two threads in said analysis representing one vertical row of squares in diagram Fig. 1, i. e., the uneven number

threads in diagram Fig. 2 are of one color, and all the even number threads of the other, as is clearly shown by the different types selected for this purpose in the diagram. Examining diagram 2 clearly shows the manner of hiding the filling on face and back of cloth, showing that where there is a sinker on account of weaving for one system of threads there is a riser of the other system of threads joining, to thus cover the place of interlacing of the first end referred to, and vice versa, thus hiding the filling completely on face and back of fabric. This feature is made use of all over the design for face as

well as back of fabric, i. e., respectively for risers and sinkers.

Diagrams 3 and 4 show the analysis for machines are used, cut once over each pick for each machine; thus: cut first one color for section No. 1 or machine No. 1, cut next

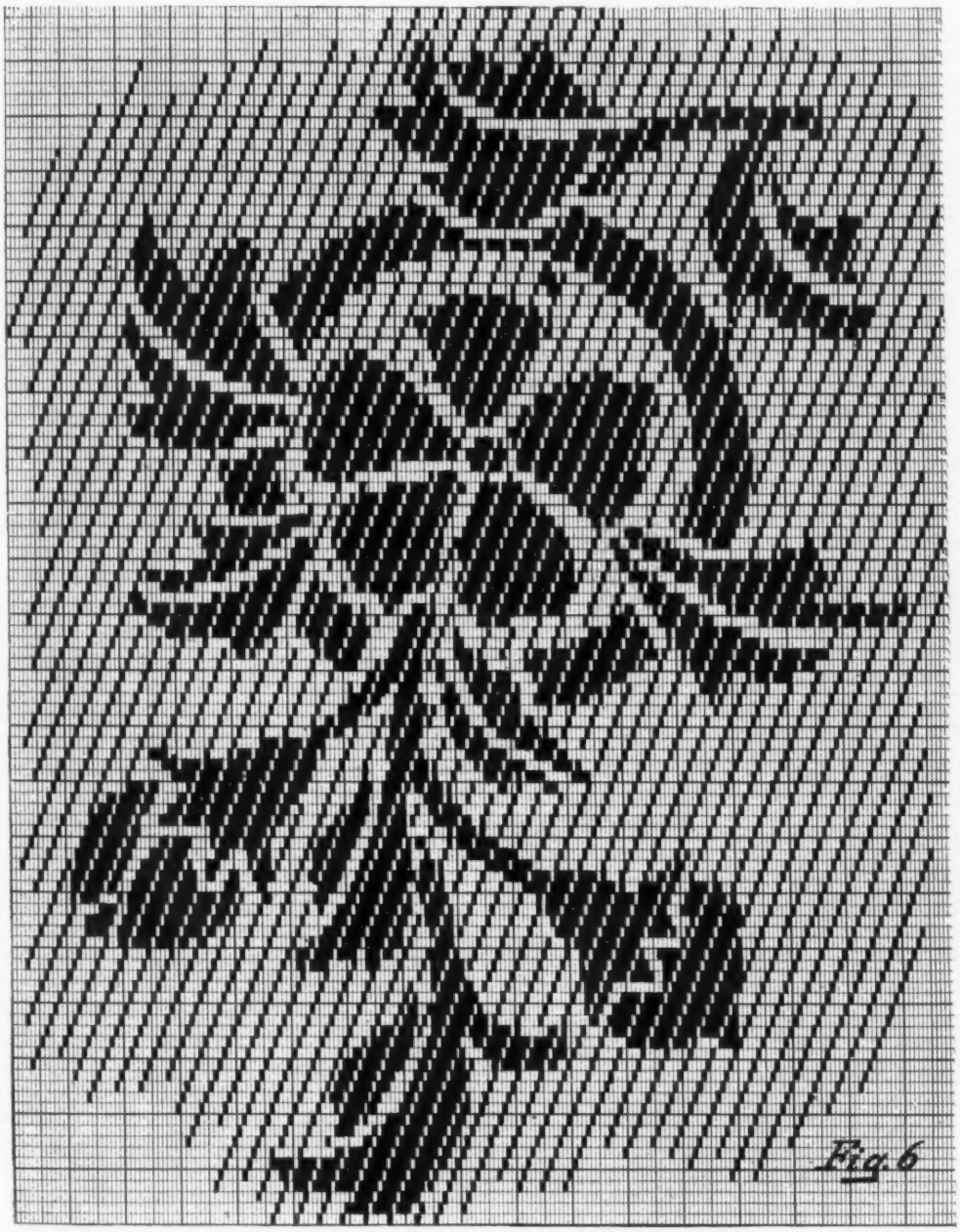


Fig. 6

card stamping, each pick to be cut twice on the same card, provided there is one machine used tied up in 2 sections; or if two jacquard the second color for section No. 2 or machine No. 2.

Diagram 3 thus refers to the card stamping

for section No. 1 or machine No. 1, with reference to design 1, and diagram 4 thus refers to the card stamping for section No. 2 or machine No. 2, with reference to design 1, the type for either diagram 3 and 4 being used to correspond to type used for design 1 and thus clearly explains the card stamping for this class of fabrics.

Fig. 5 shows us a fabric sketch, actual size, for this class of work, to be made with a texture of: 150 warp threads and 31 picks per one inch; using a two ply heavy cotton warp in connection with a coarse filling for obtaining the characteristic rep or cord effect filling ways in the fabric.

Width of sketch, one repeat = 4", thus $4 \times 150 = 600 =$ size of jacquard machine required to weave fabric, calling for one 600 jacquard machine tied up in two sections as explained on pages 48 and 49 of "The Jacquard Machine Analyzed and Explained," for the production of these kinds of fabrics.

Fig. 6 shows a portion (one figure nearly complete) of the design on point paper, and which, by means of diagrams Figs. 1-4 will readily explain how to cut the cards.

THE MANUFACTURE OF SILK FROM FIBRE TO FABRIC.

IV.

SPUN SILK.

In the reeling of the filaments of silk from the cocoon and their transformation into "thrown-silk yarn," more or less waste results from floss, and broken and defective ends, and this, with the cocoons that are partially unreeled and those that are pierced by the escape of the chrysalids, or otherwise defective, constitutes the material for the manufacture of "spun silk," also known as "chappe" silk, "floss," etc.

Another defect in coccons is that the worms are not killed in time, and have been allowed to commence eating their way out. All this waste material, after being properly prepared, is carded, combed, and spun into a yarn partaking of some of the qualities of thrown silk, although it is not as bright, its lustre varying largely according to the amount of gum retained on the fibres. The more the gum has been boiled out, the greater the lustre the fibres have. Again, spun silk is weaker than thrown silk, both in strength and elasticity.

THE BOILING,

which is a preliminary operation, is usually extended for about two hours, after which the silk is dried and then put in a damp place in order to enable it to be better afterwards worked.

After being carded or torn up into short workable lengths, the silk is dressed—a proceeding somewhat similar to combing. The process results in a lap which is afterwards gilled, drawn, and then passed to the roving frames, preparatory to spinning.

Spun silks, with the exception of yarns for zephyrs, are generally doubled and in turn gassed, for which purpose they are passed quickly through a gas jet about a dozen times and when they lose about 5 per cent. of their weight. The gassing operation is necessary, because, owing to the character of the silk, the ends of the fibres project more or less from the body of the thread. After gassing, the spun silk is ready for warping, and it is a somewhat peculiar fact that, with the exception of goods of the zephyr class, it is seldom used for filling. Its usual use is as a warp, with tram silk as filling, or as extra warp in the decoration of some cheaper fabrics.

It is also used to a great extent for sewing and embroidery silks. Spun silk is difficult to distinguish from pure silk, but it can be, with more or less accuracy, by the irregular form of the thread, and especially by the remarkable irregularity of the surrounding envelope of sericin or gum.

Another method of procedure for the manipulation of the silk previous to spinning has been lately patented here, claiming for its object, first, to produce less waste in the spinning of "spun silk," and, second, to produce a better, more lustrous yarn, using the long staple for one kind of yarn and the short staple for an inferior kind of yarn. In the manufacture of silk waste into yarn, it has been the custom to remove either the gum from the filaments at the outset by boiling them in

a liquid solvent, and then after cleansing and drying them, to pass them through suitable mechanism, whereby their transformation was effected, or else to subject them to the action of appropriate mechanism and then remove the gum therefrom at some subsequent stage of the treatment prior to the spinning operation. It has been claimed that when the first method has been followed, the materials have been so matted together by the boiling action, that the separation of the filaments was accomplished only at the expense of breaking them into such short lengths that a great proportion of them, amounting in some instances, to 50 per cent. and over, has been extruded as noil and has had little value, owing to the fact that the yarn produced from them has had but little lustre and strength, and hence could be used only for the cheapest products. Again, when the boiling and degumming operation took place at a later stage in the proceedings, but previous to spinning, the treatment of the material by the mechanism was of such a character that only loose and partially opened up material could be treated, and even with this, the yarn produced thereby has lacked the requisite lustre, in consequence of the fact that the constituent strands which composed the filaments were separated from each other by the degumming operation before they were bound together in the spinning operation, and as a result, they could not be properly incorporated into the yarn, but projected from it in the form of fuzz, which, of course, detracted from its value and made singeing necessary.

In the new method of operation, the silk waste is first subjected to the action of a garnett machine, without boiling or removal of gum, with a view to the opening and separation of both the material composing the cocoons and the remainder of the waste and the breaking of the longer filaments into shorter lengths, which in practice it is preferred should not exceed 12 to 14 inches.

The material, as thus treated, is next passed through a series of ordinary preparing gill boxes, for the purpose of arranging the filaments in parallel relationship and forming them into a continuous, even, and uniform sliver. From this series of gill boxes, the sliver is next passed to and through an ordinary wool-combing machine in order to separate the shorter filaments or noil from the longer filaments, which latter are then converted into yarn by drawing and spinning in the same manner and by the same machines as are ordinarily employed in the drawing and spinning of long fibre wool.

The shorter filaments or noil, are subjected to the action of an ordinary short fibre woolen card, and, after converting them into a roving, they are spun into yarn on an ordinary mule.

The different yarns thus produced are in turn boiled off or degummed and then cleansed, after which they are ready for subsequent use in the manufacture of fabrics. Instead, however, of thus degumming and cleansing the material in the yarn, when the latter is to be manufactured into fabrics, these steps can be deferred until said fabric is woven, it only being essential that this degumming and cleansing of the waste be deferred until after the spinning operation has been effected, in order to obviate the felting together of the filaments of the silk, incident to the boiling and degumming of the same, when in an entangled condition, as well as the separation of the ends of the constituent parts of the filaments and consequent projecting fuzz when broken or otherwise, until after they have been bound into the yarn.

WILD SILK.

By this is meant the product of an uncultivated and unattended silk worm, which lives in a wild state. The most important species of the wild silk worm is Tussah, being the product of the lava of the moth Antheraea mylitta, and is principally found in India and China. This silk has until lately been greatly neglected, but at present is attracting considerable notice among manufacturers. The Indian moth is distinguished by four large transparent, window-like wing spots, larger in the female than in the male, almost of the transparency of glass, surrounded by a purple circle. The transparent wing spots on the tussah moth are regarded with superstitious reverence by the natives of India, and the moth is there regarded as a sacred insect. The cocoons are larger than those of the Bombyx mori or cultivated silk

worm, they are practically the shape of an egg, and have a silver drab color, the silk having a vitreous lustre.

The fibres appear as double threads, but not structureless like true silk, being composed of a bundle of very fine fibres manifested by parallel longitudinal stripes. Polarization colors are but slightly apparent; the cross section of a fibre is an elongated quadrilateral, and a number of fine and dense granules are displayed therein.

The outside silk filament of the cocoon is slightly reddish, and consists of separate fibres of different lengths, while the remainder of the silk on the cocoon is generally unbroken to its centre. The filaments are glued together somewhat by a peculiar secretion of the worm, which permeates the whole wall of the cocoon, imparting to it its drab color.

China tussah silk is the product of the caterpillar of the moth known to entomologists by the name of Antheraea pernyi, and comes from that part of north China of which Chefoo is the southeasterly limit. The Chinese moth has also four transparent wing spots, but they are much smaller than those in the Indian moth, and not so transparent. These naked spots on their wings are a consequence of the entire absence of the wing scales, which entirely cover the whole of the other parts of their wings. The Chinese tussah moth differs much in appearance and also very much in color from the Indian moth. The microscopical structure of the ultimate fibres also differs considerably. The worm is more insignificant in appearance than the Indian, which is arrayed in a glorious mantle of green. It is also a much plainer one than the Indian, and somewhat smaller. This caterpillar feeds on the leaves of the oak, and it is different in appearance, habits, and color from the Indian tussah silkworm.

The Chinese cocoon is soft, and has not much definite shape or consistency, being generally formed between two or three leaves of the oak trees on which the worm feeds. The cocoon measures 1 1/2 inches in length, diameter, 3/4 of an inch, and weighs from 8 to 9 grains.

Tussah silk has properties suitable for plush purposes superior to cultivated silk, where length of pile is required. Cultivated silk is too soft, and the pile flattens with the touch. This is simply owing to the respective sizes of the fibres. Tussah silk fibres are about the 750th of an inch in diameter, while that of the Bombyx mori of commerce is the 2,000th of an inch. The strength of the bave or double fibre of tussah silk is 12 3/4 drams, with an elasticity in a foot of 4.4 inches. The strength of the bave of Indian silk is 6 3/4 drams, and the elasticity 3.6 inches.

Tussah silk cannot be reeled easily, nor, until recent years, could it be dyed without great difficulty, but step by step, successful methods have been found.

Tussah silk is bleached before dyeing delicate and bright colors. The agent used in this process is barium binoxide, from which free baryta hydrate is first removed by washing the binoxide in cold water. A bath is next prepared containing binoxide in proportions from 50 to 100 per cent. of the weight of silk to be bleached. The silk is afterwards washed in this bath, which is heated to 175 deg. F. for about one hour, and in turn passed into dilute hydrochloric acid and washed again. If the silk does not become a clear white, the operation must be repeated, or we may also complete the bleaching by scouring the silk in a solution of potassium permanganate and magnesium sulphate, and afterwards in a solution of sodium bisulphate, to which hydrochloric acid has been added. Great care must be used during this operation not to leave the silk longer than necessary in contact with the barium binoxide, as otherwise it becomes dull, harsh and tender.

Another agent for bleaching silk is peroxide of hydrogen. The silk is steeped for several hours in a dilute and slightly alkaline solution of commercial peroxide of hydrogen, and afterwards is well washed; first with water acidulated with sulphuric acid, and afterwards with water only.

Another kind of wild silk is the one derived from the antheraea yamamai of Japan. This silkworm also feeds upon the foliage of the oak when obtainable. The yamamai silk moth goes through its larval or feeding stage at a time when the oak tree is almost desti-

tute of foliage, or while the leaves are not sufficiently matured for the silkworm to feed upon.

The cocoon of this silkworm can be reeled with great facility, hence it is of considerable importance, for though some of the Indian wild silks are reeled by the natives, the process is tedious and very slow, and thus it is hopeless to expect any large quantity of reeled silk from there.

In India no less than thirty-six varieties of wild silkworms feed upon different forest trees and shrubs. Chief among these is the antheraera assami, or moonga, described as a very excellent silk producer, which feeds upon the mango as well as the mulberry, and whose larva produces a large, fine and easily reeled cocoon, of a medium light color, being one of the best, if not the best, of the wild varieties. The attacus atlas found there is the largest of the silk producers.

BOILING OFF AND BLEACHING OF WILD SILKS.

Wild silk differs from cultivated silk in one important particular, in that they are more or less colored, and this color is distributed through the fibre, and not on its surface, as in the case of the cultivated silk. As a result, the process which is capable of giving a good white to the latter, fails with the wild silks. This has been a great drawback to the use of wild silks, more especially with tussah silk, which can be got in such large quantities; however, all these difficulties have been overcome by the use of peroxide of hydrogen.

There are many processes for bleaching tussah silk, but they are simple modifications of one main process. One great difficulty is the existence of a small quantity of lime in tussah silk, which acts injuriously in the ordinary boiling off process.

A good method of boiling off and bleaching tussah and other wild silks is the following:

1st. Treat the silk with dilute hydrochloric acid, made up with 1 part of acid to 6 water, for about two hours, to remove lime; afterwards wash thoroughly. This is beneficial in other ways than simply removing the lime, since it clears away a good deal of dirt, gum and coloring matter as well, thus tending to keep the soap bath cleaner.

2nd. Boil the silk in a 20 per cent. solution of soft soap, or 5 per cent. of soda for 1 hour; wash well.

3rd. Steep for 24 hours in a weak bath, 1 deg. Tw., of hypochlorite of ammonia. This latter is made by mixing solutions of bleaching powder and carbonate of ammonia together, allowing this to settle, and using the clear liquor.

4th. After being steeped in this, the silk is treated in a weak bath of hydrochloric acid, 2 deg. Tw., for from 20 to 30 minutes, after which it is well washed, then treated with the bleaching process.

5th. A bath of peroxide of hydrogen for this purpose is made up as follows: For 10 pounds of silk the bath is made up with 46 gallons of water, 2 gallons peroxide of hydrogen (10 vol.), and a little aqua ammonia or borax. The silk is then entered into this bath and left for 24 hours, after which it is taken out and well washed. By this process the silk should now be thoroughly bleached, but if not sufficiently white, the peroxide bath may be repeated.

The Koechlin process for bleaching tussah silk is as follows: Prepare a bath with 22 gallons of water, 22 pounds caustic soda, 66 pounds soap, 11 pounds calcined magnesia, 11 gallons peroxide of hydrogen, 10 vol., and a little ammonia. The silk is steeped in this, or, better still, boiled in it for a few hours. The results should be satisfactory.

Another method is: First, boil in clean water for 1/2 hour, wring out; second, boil in a solution of 30 per cent. soap, or 10 per cent. soda crystals for 1/2 to 1 hour; wash in warm water, then steep in a bleaching bath made of 40 gallons of water, 2 gallons peroxide of hydrogen, and a little ammonia for 10 to 12 hours; repeat if necessary, finally wash the silk well.

(To be continued.)

PRACTICAL POINTS ON WOOLEN AND WORSTED FINISHING MACHINERY.

THE STEAMING AND STRETCHING OR BOILING AND STRETCHING MACHINE.

The steaming and stretching machine ordinarily receives the cloth from the extractors, and has for its object to smooth

out all wrinkles, prevent lightning effects caused by too long fulling, to sadden the cloth to its natural state, and finally wind the cloth under operation on to wood rolls ready ior the gig or napper as the case may be. For still further improving the lustre and feel of face finished goods before their going to the dryers, as well as to remove wrinkles and creases in cloth that has laid around for a long time, and for steaming and stretching in general, this machine will be especially found of advantage.

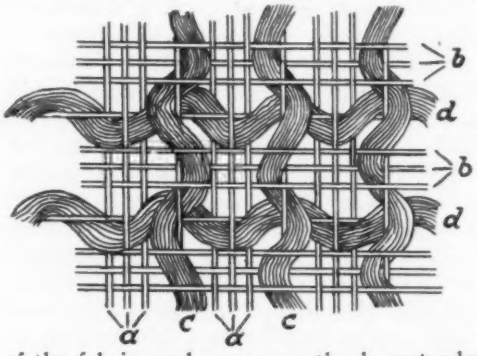
The cloth usually is run into the machine from the open fold, and passes first through tension bars, then over the first stretch or expansion roll to the second stretch or expansion roll. Between these two rolls there are several lengths of perforated pipe by which the steam is let on to the cloth as it passes over the fabric, thus receiving the cloth while it is in a perfectly smooth condition, and from where it goes directly to the winding roll. The machine will handle the heaviest or lightest goods equally well, as the tension of the cloth and the hardness of the roll can be regulated. All the running parts of the machine are gears or sprockets and chain, so there are no belts to be affected by the water or steam. Some of these machines are built to fold the cloth off on to the floor, in place of winding it on a roll, again some have both attachments applied, either one of which can be used as the case may require.

This machine is also built with a boiling pan, so the cloth runs through boiling water, the latter being boiled by a perforated steam pipe roll, set in the pan, and in which instance the machine is termed a "boiling and stretching machine." Some machines again are built having both attachments (steaming and boiling) added, either one of which may be used. Again the regular steam box can be substituted for the perforated steam pipes, if preferred. Larger machines having three stretch rolls, double the steaming capacity, and a larger brush with two or three cloth contacts are also built.

All worsted fabrics that are to receive a finish that requires gigging should be taken from the washers to the steaming and stretching or boiling and stretching machine and rolled up to give them a smooth face free from wrinkles and pits and streaks. They should remain on the rolls from two to three hours.

A NEW FABRIC STRUCTURE FOR UNDER CLOTHING, ETC.

This novelty relates to the construction of a loose fabric so interlaced with coarse spiral wool warp threads and picks that the same is more particularly suitable for under clothing, i. e., a fabric structure worn next to the skin, being capable of automatically rubbing the skin, while at the same time allowing the air to get at the skin, and thus not stop the perspiration, in turn resulting in what we may consider a sanitary fabric structure for underwear. It is claimed for the new fabric structure that knit fabrics as now constructed when resting on or bearing against the skin yield, without exerting any special rubbing action upon the skin; again the numerous pores or spaces between the yarns or loops are apt to close, owing to the elasticity



of the fabric, and consequently do not admit air freely to the skin.

The new fabric structure, as will be seen from the accompanying diagram, which is an enlarged plan view of it, comprises straight warp threads a and picks b, woven loosely, and coarse spiral warp threads c and picks d. These spiral warp threads and picks are preferably of wool, and are so loosely interlaced with the straight intersecting structure that they attain a spiral like or frizzly shape, as shown in the diagram. The straight warp threads and picks are shown divided into groups of three threads in each and the

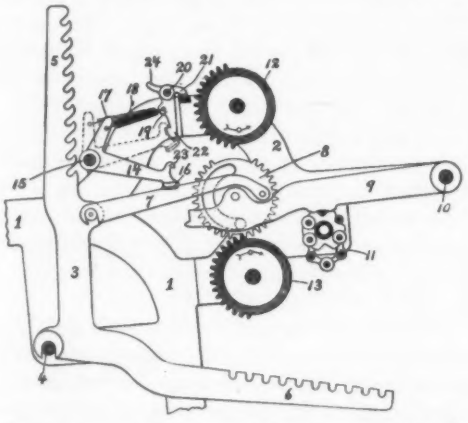
coarse spiral or frizzly warp threads and picks as placed between these groups respectively; however, the number of straight warp threads and picks in each group may be varied to suit special fabric structures. As will be readily seen from the illustration, the coarse spiral or frizzly warp threads and picks not only divide the groups of straight warp threads and picks, while leaving ample spaces between all the yarns, but also project on both faces from the plane of the straight warp threads and picks.

CHARACTERISTICS OF THE NEW STRUCTURE.

The fabric so produced presents on both faces projections which render it rough; again, it cannot be stretched to such an extent as knit underwear, since the straight warp threads and picks prevent it from stretching. The coarse spiral or frizzly warp threads and picks, prevent the straight threads and picks from shifting, and they also prevent the spaces between all the yarns from closing.

AN IMPROVEMENT TO THE KNOWLES' HEAD MOTION.

The new device is an improved arrangement for making the action of this shedding mechanism positive. The application of the improvement to the shedding mechanism is best shown by means of the accompanying



illustration, which is a side view, partly in cross section, of a portion of the shedding mechanism.

Referring to the illustration, 1, indicates a portion of the arch of a loom to which is attached the head stand, 2. Three, indicates one of the harness jacks, as pivoted on a rod, 4, said rod extending across the width of the shedding mechanism, and being also used as a pivot for the other harness jacks which are placed side by side in the mechanism. The two sets of straps which connect to the harnesses in the loom are attached to the harness jacks, 3, at 5 and 6 respectively, and thus produce a shed during weaving. Each harness jack, 3, has a connector, 7, pivotally attached to it, the other end of said connector being connected to a vibrator gear, 8. Each gear, 8, is carried by a vibrator lever, 9, as pivoted at 10, said levers, 9, resting on the pattern chain, 11, which is made up of rolls and tubes according to how it is desired to operate the harnesses. The vibrator gear, 8, is actuated by coming into the path of either of the two cylinder gears, 12 and 13, which revolve constantly in the directions of the arrows. The gear, 8, is revolved in one direction for one-half of a revolution by the upper cylinder gear, when a roll on the pattern chain, 11, comes under the lever, 9, and raises it, and in the opposite direction for half a revolution by the lower cylinder gear, when the roll passes from under the lever, 9. These movements of vibrator gear, 8, are converted from circular into linear motion by means of the connector, 7, and the harness jack, 3, is thus moved back and forth on its pivot, 4, to raise and lower the harness. In order to make the action of the vibrator gear, 8, as positive as possible, so as to get perfect shedding, a bell crank lever, 14, as pivoted at 15, is provided, having one end made grooved, at 16, so as to fit on the top side of connector, 7. The upper portion, 17, of the bell crank lever has one end of a spring, 18, connected to it, the other end of said spring being attached to a catch, 19, as pivoted at 20. This catch is provided with a projection, 21, which limits the movement of the catch.

The action of the spring, 18, keeps the lever, 14, pressed firmly against the connector, 7, and thus makes its movement positive.

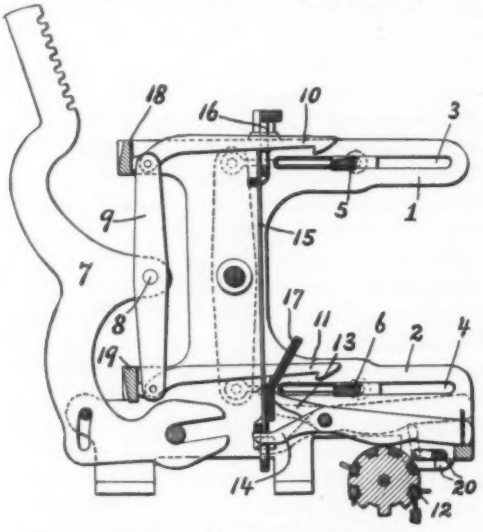
The lower end of the catch is shaped in the form of a projection, 22, which will hold the lever, 14, up when its projection, 23, is in catch with it.

When it is not desired to use the full number of harnesses, the levers, 14, are raised off

of the connector, 7, of the unused harnesses and held out of contact with them by means of the catches, 22 and 23, until they are to be used again, when they are released by simply pressing on a thumb piece, 24.

SHEDDING MECHANISM FOR WHITIN DOBBY LOOMS.

This shedding mechanism, or what is ordinarily called a dobby, is characterized by its compactness of construction and the economical use of parts, especially those for operating and controlling the movement of the hooked jacks and levers on said dobby.



The accompanying illustration is a cross sectional view of this dobby, and in which 1 and 2 indicate its end frames, being provided with slots, 3 and 4, in which the lifter bars, 5 and 6, slide for operating the hooked jacks. Each harness jack, 7, as pivoted, at 8, has attached to its centre projection a connector, 9; each end of said connector having attached to them the rear ends of the top and bottom hooked jacks, 10 and 11, respectively. These jacks, 10 and 11, are moved back and forth by means of the lifter bars, 5 and 6, respectively, when the hooked ends of the former drop into their paths. The dropping of the jacks is controlled by the pattern chain, 12, through the lever, 13, for the lower jack, 11, and through the lever, 14, and vertical rod, 15, for the top jack, 10. Each top hooked jack, 10, is placed in a separate slot of an upper grate, 16, which thus act as guides for the former. The lower end of the grate is curved to an angle of 90 deg. and has slots in that portion which are used as guides for the top ends of the vertical rods, 15, thus not requiring the use of other guides or collars, and consequently reducing the cost of construction of the dobby. The lower jacks, 11, are similarly guided in the slots of a lower grate, 17, said grate also being provided with slots for guiding the levers, 14. The lower ends of the rods, 15, are also held in their proper position by holes in the grate, 17, these latter coming in between the part of the grate with one set of slots and the other part with the other set of slots.

The working of the dobby is similar to the regular style, the stops, 18 and 19, of course, being used, alternately as pivots for the connectors, 9, when the jacks are actuated. The harnesses may be leveled by means of a pivoted piece, 20, being pushed under the ends of the series of levers, 13 and 14, by means of a handle at the side of the dobby.

THE FEEDING OF INTERMEDIATE AND FINISHER SCUTCHERS.

One of the most important points for the production of a uniform sliver by the card, for drawing or combing purposes, is the feeding of a most uniform lap to the card, and as the latter depends on the proper working of the intermediate and finisher scutcher—machinery also termed "cotton lappers"—we will have to inquire in the most vital parts of this machinery to ascertain where the proper foundation for a perfectly uniform lap is laid; and which, without question, is the proper feeding of these lappers, for only when they are fed properly can they in turn produce an even resulting lap.

As will be readily understood, the backbone of an even yarn throughout the entire process of cotton spinning is continuously "doubling," i. e., taking two, three or more items and transforming them by means of intermixing and drawing out, in a resulting item considerably more even and uniform in its dimension.

There are two places in an intermediate

and a finisher scutcher—or cotton lapper—where care of an even feeding is taken in consideration by the builders of cotton spinning machinery, viz:

(1) How to feed, and

(2) How to regulate any inequalities of this feeding.

The first item is uniform to all cotton lappers, but it is the second item and where the skill of some machine builder excels.

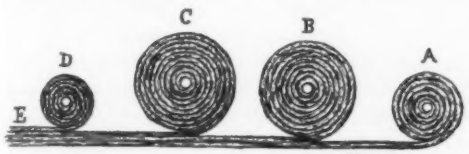


Fig. 1

HOW FEEDING IS DONE.

The same is identical for both, the intermediate as well as the finisher scutcher, four laps (as a rule) from the breaker scutcher are set up in the feed table of the intermediate scutcher or the finisher scutcher, provided the former is omitted, as is the case in mills spinning less particular qualities and counts of yarn. It will be readily understood that where breaker, intermediate and finisher scutchers, i. e., three scutchers in the series, are used, the finisher scutcher is fed by laps from the intermediate scutcher.

The arrangement of how to place these laps on the feed table of the lapper is readily shown by means of diagram Fig. 1. Each lap is held in its proper position on the feed table by means of its guide rod being held in one of the apertures in the rack of the feed table. As the laps thus unwind, caused by the action of the feed apron, it will, with reference to our illustration, be seen that lap A, or the one as resting on the feed apron in turn, has laps B, C and D unwound upon it. E shows the four-ply lap as thus fed to the cotton lapper.

It will now be readily seen, that in this feeding four (or more or less, as the case may be) laps, one on top of the other, to the scutcher, any number of inequalities the individual laps contain, are balanced in the four ply lap at E (light places in one lap will come in proper position with heavy places in another lap and vice versa); however some will remain and it is the purpose of the feeding mechanism of the scutcher

TO REGULATE ANY INEQUALITIES IN THIS FOUR PLY LAP THUS FED TO THE MACHINE.

This is done by means of the "evener mechanism" of the scutcher, all makes of which are based upon the ingenious and well known "Lord" system, also termed "piano feed." An illustration of this original Lord system of feeding is given in connection with Figs. 2 and 3, and of which the first shows a side and the latter an end elevation of it. In connection with this feed the four ply cotton

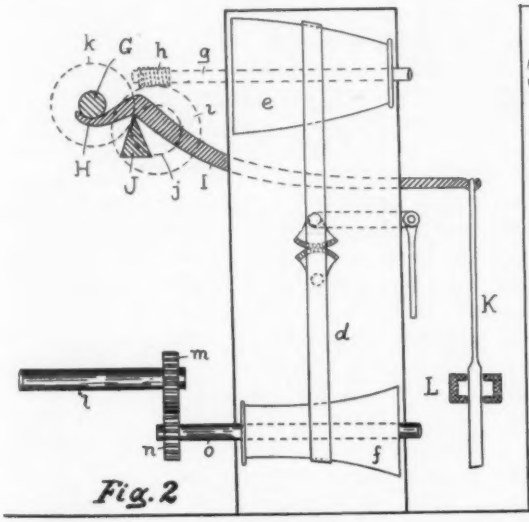


Fig. 2

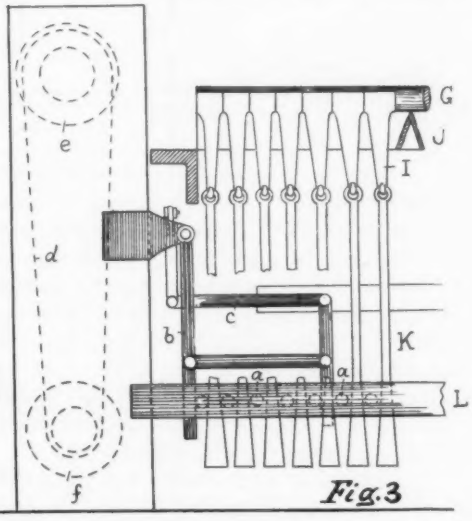


Fig. 3

lap is delivered to beater feed rolls, or the same may be shaped so as to deliver direct to the beater through the pedal roller, G, working on the noses, H, of the levers, I, as fulcrumed on the rail, J; the tail ends of the levers, I, carrying peculiar shaped pendants, K. Seven of these pendants are only shown in the illustration, sixteen as a rule being used, the last one (not shown) working against the frame of the mechanism and to which bar, L, is secured; thus the pendants

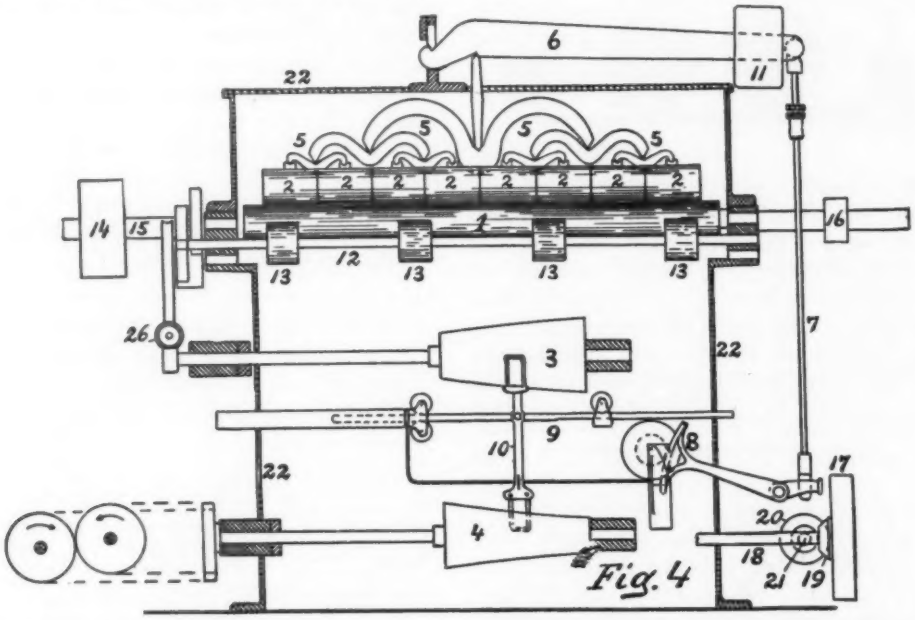


Fig. 4

can communicate excess of motion in one direction only. The first five pendants are shown broken away for sake of clearness of other parts. These pendants extend through the bar, L, the bottom of each pendant being fan shaped and separated in the bar, L, by a series of friction bowls, a. The series of pedal levers, I, extend across the full width of the machine and normally rest with their noses, H, against the pedal roller, G.

When the sheet of cotton coming from the laps is passed between this roller, G, and noses, H, if said sheet were regular, all the pedal levers would be depressed equally and thus no regulation device required, but this is not the case. If again thick and thin places in the sheet of cotton were always evenly distributed and thus one-half of the pedals raised on account of the heavy places, the other half equally depressed on account of thin places, thus neutralizing each other, the result would be the same. However, either thick or thin places predominate continually in the sheet, thus the variation of depression of the different pedal levers is sometimes slight and at other times excessive, in turn indicating an insufficient or an excess of feed, to overcome which is the purpose of the evening mechanism.

The pendants, K, are guided by the rail, L, and as the pendants move up or down as the thickness of the feed varies, said movement, even of one pendant, will affect the position of all the bowls, a. The last of the pendants, as situated nearest to the cone pulley, is joined to a lever, b, connected with the shifter lever, c, the excess movement of the friction bowls moving lever, b, and in turn lever, c, shifts through connections the position of the belt, d, on the cone pulleys, e and f.

When an average thickness of cotton (normal feeding) is passing below the pedal roll, G, the belt, d, works in the middle of the two cone drums. If the belt, on account of thin feeding, moves to the large end of the driving (bottom) cone it will simultaneously move to the smaller end of the top cone and

in turn revolve said cone quicker, again if belt, on account of heavy feeding, moves to the small end of the driving cone, it will simultaneously move to the large end of the top cone and in turn drive said cone more slowly; the top cone being geared to the pedal roller, G. Thus it will be seen that if a pendant was lifted, the bowls, a, would move outward to shift the belt to the smaller diameter of the bottom cone pulley and in turn decrease the feed; again if at the same time another pendant was dropped to the same extent as the one raised, no change in feed would result, since in the latter case bowls would move at the same time also inward and thus neutralize the previous action. By this it will be readily seen that it is only when the average action of the whole of the pedals is in excess, one way or the other, that the lever, b, is moved either in or out, to in turn through lever, c, shift the belt and accordingly vary the speed of the cone pulleys and in turn that of the pedal roller, G, which regulates the feed by being geared to the driving shaft of the feed apron. The connections for accomplishing this variation in speed of the pedal roller consist in providing on the extended shaft, g, of the top cone pulley, a worm, h, which meshes with worm gear, i, the pinion, j, of which engages with a gear wheel, k, fast on the pedal roller, G, thus any change in the speed of the top cone pulley will be immediately transmitted to the pedal roller, G, and the feed in turn kept even. The cones are driven at a constant speed from the lap end through shaft, l, carrying gear wheel, m, meshing with wheel, n, fast on shaft, o, of the bottom cone drum, f.

THE HOWARD AND BULLOUGH IMPROVED EVENER.

The construction and operation of this feed is readily shown by means of diagrams Figs. 4, 5 and 6 and of which

Fig. 4 is an end elevation of the feeding end of a cotton lapper,

Fig. 5 is a section showing the relation of beater to the feeding mechanism, and

Fig. 6 is a detail showing drive of calender head from beater shaft.

Letters of reference in all three illustrations are selected to correspond in order to simplify descriptive matter.

This evener is an improvement brought out after considerable experimenting and many tests by the well known builders of it, the American Machine Co., Ltd. In this machine the feed roll, 1, and evener plates, 2, are arranged on the same principle as the well known "Lord" system, which gives great cleaning capacity, owing to the bite of the

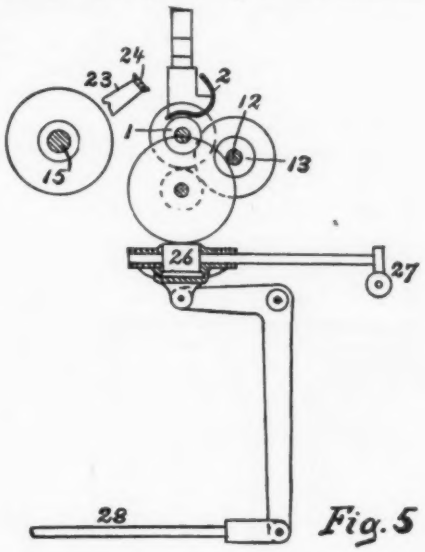


Fig. 5

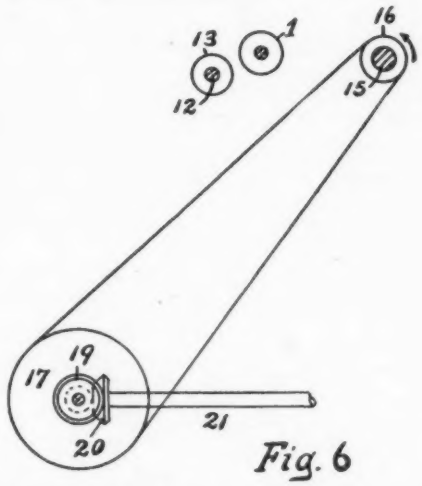


Fig. 6

feed plates being close to the beater. The plates are on top of the feed roll, which is a 3-inch steel roll, and which thus makes a very rigid support for the evener plates and makes sure that all the variation in the thickness of the laps will affect the position of the evener

belt on the cones, 3 and 4, and which are conveniently placed under the feeding apron or lattice of the machine. The lower cone, 4, works in an adjustable cradle, allowing the belt to be made endless and kept at an even tension at all times in any position on the cones. The mechanism is what might be called a direct connected evener, as any motion of the evener plates is communicated directly to the cone belt through the yoke arrangement, 5, large lever, 6, vertical rod, 7, toothed segment, 8, and rack, 9, secured to the cone belt guide, 10.

Any change in the thickness of the sheet of cotton passing between the feed roll and the evener plates is thus communicated to the

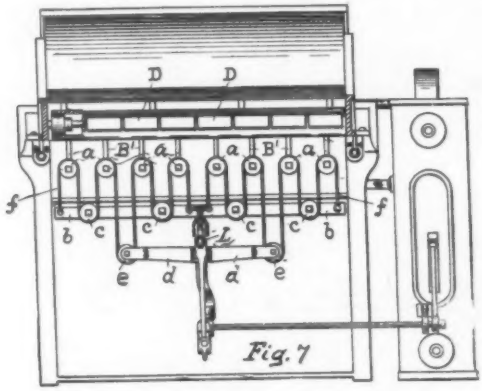


Fig. 7

belt. The lever, 6, has a large weight, 11, resting on it near its outer end, which assists the movement of said lever, 6, when the latter is operated. The arrangement is very sensitive and the cone belt at once takes its proper position when a variation in the weight of the cotton sheet occurs.

Other numerals of reference, not directly connected with the evener mechanism of the machine, are thus: 12 indicates the apron shaft and on which are fast the apron driving rolls, 13. The machine is driven from a countershaft by means of driving pulley, 14, fast to shaft, 15, the latter carrying on its other end a pulley, 16, which in turn drives pulley, 17, fast to cross shaft, 18, the latter carrying also a bevel gear, 19, which through another bevel gear, 20, drives the side shaft, 21, as driving the calender rolls in front of the machine. Twenty-two, indicates in section the side and top framing of the machine; 23, one of the beater arms; 24, its beater blade; 25, is an intermediate stud; 26, worm; 27, spiral gears; and, 28, rod connecting with knock-off lever at calender head.

The evener is so simple that it can be understood by the most ordinary picker hand and there are practically no parts to get out of order, and the breakages are reduced to a minimum.

The results from this evener are very satisfactory and the evenness in the weight of whole laps and individual yards of laps is appreciated by the many mills which already have the improved arrangement in operation.

Another make of evener, constructed also upon the "piano feed" principle, is shown in its end elevation in Fig. 7.

In this arrangement the tail ends of the series of arms, B', as carrying the evener plates, D, in front, are provided with pulleys, a. Below the ends of the arms, B', is placed a stationary bar, b, carrying another series of pulleys, c, and mounted on and below said bar is a cross arm, d, the two ends of which are each provided with pulleys, e. Over these pulleys, a c and e, on each side from the centre of the cross arm, d, extends a chain, f, fastened at its ends to bar, b. By this arrangement it will be seen that a corresponding amount of raising and lowering of the arms, B', will not influence lever, L, as resting upon cross arm, d, and in turn the feed will not be changed, but an excess of movement of the arms, B', in one direction or the other will act to either raise or lower the lever, L, and through suitable connections with said lever, the belt on the cone pulleys is shifted, to in turn regulate the speed of the pedal, i. e., feed roller. Instead of fastening the chain, f, in the centre of the bar, b, as shown, a roller may be placed on the bar at this point and the chain passed around it, thus making a chain of one piece.

In 1775 the French Academy of Science offered a large prize for a method of making soda from salt. As a result a patent was granted to Nicholas Leblanc in 1791 for a method he submitted, and this process still produces about half the world's supply of soda.

FLAX.

The flax fibre of commerce is obtained from the stem of the flax plant (Linum usitatissimum, which is grown here, Canada, as well as all over central and northern Europe.

The portion of the flax plant as used in the manufacture of linen yarn is the bast tissue, situated between the bark and the hard or woody tissue. The characteristic features of the flax fibres are their length, strength, fineness and color. The fibres of flax vary with the tapering character of the stem, and the natural ends are sharp pointed and generally long drawn out, their length varying from 2.6 inches down, and the diameter from 0.0006 to 0.0015 inch.

PULLING AND RIPPLING OF FLAX.

The farmer who aims at the production of a good fibre, must pull the plant before it has attained its full maturity; namely, when the lower portion of the stalk, to the extent of two-thirds of its height, has become yellow, and while the bolls or seed capsules are just changing from green to brown. At this stage the plants are pulled in handfuls, and these are laid across each other diagonally until a sheaf is complete, when the whole is carefully bound. Stems of a different length should be pulled separately and kept in separate sheaves.

The next process to which the freshly pulled flax is submitted is rippling, which has for its object the separation of bolls from the stem, this process as a rule being carried on in the same field where the flax was grown. The ripple is a kind of large comb composed of large teeth about eighteen inches long, made of half-inch square iron, placed 3/16 of an inch apart at the bottom and tapering slightly toward the apex, being screwed down to the centre of a nine-foot plank and resting on two stools. This comparatively great length and smallness of the iron teeth allows them to spring lightly, and so yield to the pull of the stalk, instead of presenting a rigid surface, which would act too roughly upon them. The operation of rippling is performed by hand by drawing successive bundles of flax through the upright prongs of the ripple. The bulbs on the stems, being greater in diameter than the distance apart of the rods, are therefore stripped off in the process.

RETTING.

The adhesion of the hard tissue to the bast fibres of flax necessitates the stems being macerated in slow running, almost sluggish waters from 10 to 14 days, so as to produce fermentation, which aids to separate the bast fibres from the cortical layer. When it is found that the woody portion separates freely from the fibre on breaking the stem about every six or seven inches along its length, the operation is complete, and the flax is then removed and allowed to drain and dry for a few hours, preparatory to being spread evenly and thinly on a meadow and left there for from 5 to 6 days in order that by the action of the air and the sun, the drying process may be completed as well as the fibres bleached. This process of "grassing" also renders the wood part short and brittle, and easily crushed and broken. When dried the flax is ready for lifting, tying in bunches and storing for the scutch-mill. Another method in use for retting the flax is what is called dew-retting, by which process the flax is spread on a meadow without steeping, simply exposing it to the action of the weather for six or eight weeks. Damp weather is the most suitable for this system of retting, since all fermentation ceases if the flax becomes dry.

As will be readily understood, the methods of retting flax thus explained are slow work, and can be carried on only in sections of the world where labor is cheap, hence since years chemists have tried to solve a quicker process for it. By means of one of the latest processes, the pulled and rippled flax is placed in vats and kept immersed by a strong framework. Steam is admitted until the temperature of the water is raised to about 90 deg. C. Acetus fermentation is developed, which causes the gummy cortex of the stem to be decomposed. About sixty hours' maceration is sufficient for the retting. The flax is afterwards dressed in the open air.

SCUTCHING.

This is the next process to which the flax plant, after retting, is subjected, and can be done by power or hand work, which consists in breaking up the woody part of the stem

and in turn eliminating it from the fibres. In hand scutching, the flax stems are first broken by placing them across a set of hard wooden slats arranged in a frame and having a similar set pivoted so as to descend between the first set of slats. The outer ends of the pivoted slats are connected by a wooden piece, which is struck with a mallet in order to break the stem as placed between these two sets of slats. During the procedure the flax stems are held by hand by means of two short rods connected to each other by a short wire, the operator gripping the two rods in one hand with the flax stems firmly held between them. The breaking process must always be begun with the root ends of the stems. After thus breaking the stems, a convenient amount of them is placed, and held with one hand, through a cut out portion in an upright board, the projecting ends of the stems then being struck several times with the blade of a scutching knife, as handled with the other hand, until that portion of the stem is completely separated from its woody part, and when the next portion of stem is treated in a similar manner until the entire length of the stems has thus been dealt with.

In connection with power breaking and scutching, although a variety of machinery is built, their principles of operation are identical to those just explained. We thus find breaking machines built with crushing rollers, between which the stems are passed; whereas in another style of machine we find one set of stationary horizontal iron bars having a similar set of bars working between them, so that when the stems are laid across the stationary set and the other set is lowered on them, they are broken by this action. The machines for scutching consist principally of a board for holding the broken stems on and having the ends project over and into the path of blades as carried by arms fast to a revolving piece, said blades taking the place of the scutching knife in the hand process. Since these blades revolve at a high speed (about 1000 strokes per minute), they must be carefully set.

A competent scutcher aims to separate thoroughly the fibre from the woody part with as little waste as possible. No doubt there will always be more or less short fibre removed along with the unworkable matter, the percentage or loss being greater when the retting process has been slighted. These short fibres, called tow, when removed from the woody droppings, are afterwards manufactured (by means of carding) into an inferior grade of yarns known as tow yarns.

When scutched, a good flax fibre is of a bright silver-gray color (resembling silk), in its appearance. When dark in color or of a greenish tint, the fibres are either of an inferior quality, or have been imperfectly treated during the previously explained manipulations. After scutching, the flax is ready for the market, i. e., the spinning mill.

TO ASCERTAIN WHETHER A YARN IS COTTON OR LINEN,

examine the threads carefully and remember that cotton threads appear of regular form throughout, whereas flax threads are irregular. When quickly torn across, cotton threads curl up, but flax threads remain smooth, this test, however, requiring more or less practice.

CHEMICAL COMPOSITION OF FLAX.

The flax plant is chemically composed of:

41.97 per cent. organic matter.
56.64 per cent. water.
1.39 per cent. ash.

100

TO DETECT COTTON IN LINEN YARNS OR FABRICS,

treat the sample submitted with a solution of caustic potash (1: 6). The flax will become more curly than the cotton, and the latter finally turns greyish white, whereas the flax is dyed orange.

Another procedure calls for treating the sample with a stronger solution of caustic potash (1: 2) and boiling for two minutes, then washing, and drying between blotting paper, when flax becomes of a deep yellow color, as compared to the cotton, which assumes a whitish or straw color.

By means of another process, the sample is boiled in water and then steeped in concentrated sulphuric acid for two minutes, when the cotton is dissolved, while the flax

remains white and unaltered, and can be separated by washing with a weak solution of caustic potash.

WATERPROOFING OF WOOLEN FABRICS.

Fabrics can be made waterproof by two methods, viz: by covering the fabric, or by saturating the same.

Under the first process a water and air-tight covering of either rubber or guttapercha is produced, and which in turn is pressed on the fabric by means of rollers, another procedure being to coat the fabric with a mixture of rubber, guttapercha, pitch, rosin, linseed or other oils, etc.

By the second process, i. e., saturating the fabric, the latter is immersed in chemicals, which more or less tend to swell the fibres, filling up their open spaces, and making them impregnable to water. For the saturating process the following different ingredients are used:

(1) Saturate the fabric with a solution composed of fat, paraffin or tar, dissolved in benzine or sulphuric ether, and afterwards allowed to evaporate.

(2) Dip the fabric in a solution of metallic salts, i. e., blue vitriol, green vitriol, and alum, which, by adding animal or vegetable glue or rubber will produce an indissoluble precipitate.

(3) Saturate the piece with acedic clay, under medium heat.

(4) Produce in the fabric undissoluble metal soaps, by saturating the same with a metal salt solution, then squeeze out the liquor, and put fabric in a soap solution.

A late patent in the process is thus:

Take 20 parts boiled linseed oil, 3 parts alum, 3 parts sugar of lead, 7 parts tar and 5 parts charcoal.

Use the last four substances in powder shape and add them slowly to the hot oil, stirring the mixture.

Another patented process is thus: Saturate the fabric with gelatin resp, glue solution (15 per cent.) and expose the fabric thus saturated in a damp condition to the action of acetaldehyde gas, or pull the fabric through a solution of acetaldhyde of from 15 to 20 per cent. strength.

AN IMPROVED HOOK FOR JACQUARD MACHINES.

This hook is brought into the market by the Crompton & Knowles Loom Works, the object of the construction being to reduce the friction between the hooks and their guide plate, and also to require less power on the part of the needles, as actuated upon by the jacquard card, to press the hooks away from the knives of the griffe, and thus prevent the liability of holes being punched in the cards by the needles, due to excessive resistance of the hooks.

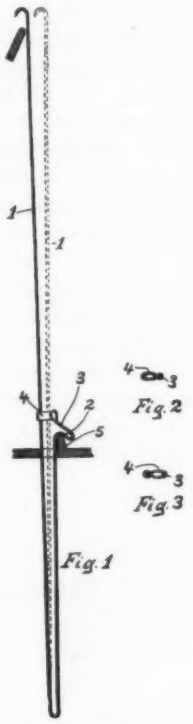


Fig. 2

Fig. 3

Fig. 1

The details of the construction of the hook are best shown by means of the accompanying illustrations, of which Fig. 1 is a side view of a hook, shown in connection with a cross section of its griffe knife and a cross section through a portion of its guide plate. Fig. 2 is a cross sectional view through the confining band and the hook, and Fig. 3 is a similar view but showing a different application of the confining band.

Referring to the illustrations, 1 indicates the hook, which is of the usual construction, except that its crook portion 2 has its projecting end 3 bent backwardly toward the main part of the hook 1, and then bent upwardly, the end of which is parallel with the main part of said hook 1 to form an attaching end for a confining band 4. One end of the confining band 4 is secured upon this free end of the hook 3, the other end being left open to loosely hold the main part of the hook 1 and allow said hook to move freely in it, as shown in dotted lines.

By thus placing the confining band 4 above the lift bar 5, the former cannot come into contact with said lift bar, and thus friction and wear are prevented, but which otherwise is the case provided the confining ring is placed below the lift bar 5 as previously has been done. By leaving the confining band open, so that the main part of the hook 1 can move freely in it, movement is given more easily to it, since the bottom end is used as a pivot for the movement, instead of the confining band, in case the main part of the hook was secured also to said confining band as was formerly the case.

Instead of having the confining band secured to the end 3 of the hook, it may be secured to the main part of the hook with the said end 3 free to move in the open confining band 4, this construction being shown in cross section in Fig. 3.

PRACTICAL POINTS ON STRETCHING, ROLLING AND GIGGING, WITH A DESCRIPTION OF THE CONSTRUCTION AND OPERATION OF THE MACHINERY USED.

After the pieces of cloth are taken out of the washer, they in turn are allowed to drain for awhile and then are folded out evenly on trucks. The particular finish which the goods are to receive, plays now an important factor in the process of wet finishing. If they are to be "face finished," they are rolled up and left to drain before being sent to the gig, however, if they are designed for a "clear face" finish also known as "thread bare" finish or if they are what is termed "fancies," it is advisable to partly extract the superfluous water and then roll them up and when, after draining for a while, they are ready for the gig.

Low grade goods, containing cotton, or lots of shoddy, or colors liable to run, if they have to be gigged, on account of the finish required, are best dried at once, after taken from the washer, since if allowed to lie wet for any length of time they are apt to have the colors run into each other, and thus spoil the appearance of the fabric, whereas if dried at once, when taken from the washer, and in turn gigged dry, they will more than make up in good looks what they lack in softness to the touch of the hand, on account of not being wet gigged.

If the fabrics are intended to be rolled up, after coming from the washer, they are taken to a stretching and rolling machine. The goods in connection with this machine, pass over a stretch roller, previously to be wound on a roller to make sure that they are smooth and free from wrinkles. The tighter the pieces are rolled on this machine, the better they will drain and the smoother they will be, a feature of special value when dealing with face finished fabrics. After the pieces are tightly rolled up, they are either laid down flat on skids or stood on end and left over night to drain. In either case, even though the rolls are turned occasionally, the goods are sure to have more moisture on one side than on the other, a feature liable to create an unevenness in the gigging and thus in the final finish to the fabric, for which reason the use of squeeze rolls has come into much favor. Not only will their use result in fabrics containing as much as possible evenly distributed moisture throughout the roll of cloth, but at the same time, the time required for the draining can thus be considerably shortened, for the squeezing can be so controlled as to have the goods, except such as are intended for face finish, at once in the proper condition for the gig, certainly a saving in time. However, in connection with face finished fabrics this rush will not do since they will finish better if they are not hurried through the wet stage and are allowed to lie a day or two in smooth, even piles in the web previously to gigging. Having thus prepared

the fabric for gigging, we now come to this process proper.

Gigging consists of the combing or teaseling out of the several fibres which in fulling have become felted together on the face (and back) of the goods. To make a really uniform fabric the gigging must be exactly alike in every part of the piece, and no spot must be subjected to any amount of working of which another is deprived.

In gigging as it is carried on today there are three considerations connected with the mere mechanical part of the work which it is very important to notice.

The first of these is the teasel.

The second is the tension of the goods as they are brought into contact with the running surface of the cylinder, as covered with teasels, and a

Third that may be mentioned is the condition of the fabric as regards dampness during the gigging process. The teasel is part of the gig which usually gets but little consideration, far less indeed than it really deserves. The teasel is the fruit of the thistle, which by careful cultivation, has been brought to such perfection that for hundreds of years there was nothing which could in any way compete with this natural product for the purpose of raising the nap on woolen cloth. It is held by many manufacturers and finishers of fine grades of face finished woolen fabrics, up to the present time, that it is impossible to displace the teasel, however, the wire gig, i. e., the napping machine, is fast winning friends among woolen manufacturers, certainly on account of economy, and in connection with some kinds of fabrics has completely superseded the teasel, whereas in connection with others both are used.

The teasel point possesses a certain rigidity and at the same time a degree of elasticity which no manufactured article that has ever been discovered can attain. If the teasel point comes in contact with a knot or lump on the surface of the cloth, it will be bent back by the velocity of the cylinder, but after the bunch is passed the point returns to its original position and no damage is done. From the nature of the teasel point the teasel certainly is particularly well suited for this gigging. Not only is it made up of a barb or point similar to a wire or steel point, but all along the edges of the barb there are little teeth or points which add their part to the ease with which the barb is enabled to do its work. It is for this reason that the teasel seems so much better adapted for working up the felt of the fulled cloth into a nap and in opening up the fibres so that all imperfections and foreign substances are removed, for which reason the mill, its care and preservation demand the special attention of those who have anything to do with it.

When a lot of teasels are received at the mill they should be stored in a dry place where they will not absorb moisture and become limp and useless.

In making use of the teasel the two great points to be kept in mind are the mounting in the teasel slat, and the wear upon it after it is in use in the gig.

In the mounting of the teasels in the slats, which is a framework of iron designed to hold the teasels in place and present a smooth, that is even, surface to the cloth to be worked upon, much effectiveness to the teasel is secured. They must be set in the slat so firmly that they will stand all the speed and working about which will be brought to bear upon them after they are in the cylinder. There must be no open places between them and the teasels must be as much as possible of one quality. Some advocate moistening the teasel before it is mounted so that it can be the more firmly and easily pressed into place. If such is made use of the usual practice is to take a basket full of teasels at a time and steam them slightly, which will soften them and in turn make them easier to be handled. However, it must be remembered that a teasel in a moist state is soft and therefore useless, again moisture will destroy its life, so that in order to make the slats thus mounted of any use, they will have to be quickly and thoroughly dried. This means a corresponding loss of time and labor before the teasel ever reaches the stage where it can do work, a fact certainly against this procedure of steaming or moistening teasels for the sake of setting them easily. Again when the fingers of the teasel setter are properly

protected, teasels may be set in the dry state just as evenly as if they are moistened, and this more effectively. It may, at the beginning, take more time for him to set a certain number of slats, but that will only be a short while and then he will be just as expert at it as if setting moistened teasels. The teasels are then not injured and can be pressed together just as solid and just as even as if they were moist. Teasels mounted in a dry state are apt to stay in the frame longer than those mounted in the moist state. Mounting teasels requires a good, quick eye, since it will not do to mount these teasels carelessly, they must be properly sorted first and afterwards still more or less selected as to size during setting or mounting the slats, since otherwise an uneven surface would result, and in consequence uneven and streaky work produced. Some shipments of teasels come to the mill with their stems cut off close while the majority have the stems left on 4 or 5 in. long. The slats for receiving the teasels are made of two strips of flat iron and the stems of the teasels are drawn through this opening, between the two strips of flat iron and what gives additional support for the teasels and helps to hold them in place. When the slat has been filled, the protruding ends of the stems are cut off evenly with a sharp knife. In connection with wood frame slats, teasels minus stems are used, and if they have any they must be cut off and this previously to steaming, provided this is practiced in the mill. The teasels must then be pressed into the frame and against each other as solid as possible so that after they are put into the cylinder, and this is set in motion, they will not fly out.

The proper selection, i. e., buying of the proper size and quality of teasels is another important factor for good work at the process of gigging. There is no reason why the teasels should not be of a size to fit the slats. For instance, why should we use a 2-inch teasel with what are termed "buttons" to fill out with, when a box of teasels ranging from 1 1/2 to 1 3/4 inches would make a better slat and this with less trouble? It must be remembered that a 2-inch teasel as a rule is more expensive than a 1 1/2 or 1 3/4 inch teasel, again that "buttons," i. e., small unripe teasels amount to nothing more or less than throwing away good money for very poor material. Certainly growers and sellers of teasels must get rid of them, for they are of no use to them, neither to anyone else. However, the price of these "buttons" is somewhat tempting to manufacturers, the same being as a rule so low that it seems like a fair investment on their part to use them; but it should be remembered that these buttons or small teasels are not as well matured as the full-grown ones, they being open and soft and their usefulness in the actual process of gigging amounts to nothing; they simply fulfilling the purpose of holding the teasels which do the work in their proper place in the slats. If this purpose, however, is attained by teasels which are effective in the process of gigging, certainly much less dead or useless material has to be handled. Again, if the proper size teasel is bought by the mill, it must be remembered that it is not only easier for the teasel setter to mount the slats, but that every one of the teasels in such a slat will be of some decided usefulness, in turn reducing the cost of the teasels as well as the expenses in setting them in slats.

When the teasels are properly set, with the whole surface of the teasels as they are ranged in the slat uniform and regular, there is no reason why they should not run on ordinary woolens for eight or ten days and do good work. Then for economy's sake and for the sake of the teasel too, the slat can be remounted and the teasels placed so as to expose another and as yet unused side to the working part of the slat. If this is done we have our several grades of teasels and at the same time can make use of the same teasel in three or four different sets where it will do good work in each.

(To be continued.)

The thick, plain, black silk used for clerical robes is called armozine.

Congo red was discovered in 1884 and was the first artificial dye known to have the property of dyeing cotton directly without the aid of any other substance.

CORRESPONDENCE AND NOTES

Upon Textile Topics at Home and Abroad.

DRYING SIZED WARPS.

(L'Industrie Textile.)

The question of sizing warps has been treated extensively in respect to the baths employed, the arrangement of pans, the operation of the rolls, etc., but very little has been said regarding the drying of sized warps and we propose in this article to supply this deficiency. Before treating this important question let us consider briefly the object of sizing as well as the principal types of machines in use. As is well known, sizing is a preparatory operation which makes the warp yarn resistant to the strain and friction during weaving. To this end the yarn is conducted through a preparation which coats the surface of the thread and causes its constituent fibres to stick together. The composition of the sizing preparation has a great influence upon the quality of the fabric. It is generally composed of starch as a base or of fermented farinaceous substances. Gelatine is not used owing to its high cost. To this base is added:

1. Dextrine or British gum, which increases the consistency.
2. Glycerine or soap, which makes the yarn oily and pliable.
3. Sulphate of copper or iron, which prevents decomposition or mould.
4. China clay or chalk, in case it is desired to increase the weight of the cloth.

The impregnation of the yarn can be effected by two distinct methods. By one method called *parage*, the size is applied only in proportion of 6 to 10 per hundred. It remains on the surface of the yarn and the drying process is therefore very rapid. By the other method, *encollage*, the size is applied in a boiling bath to the warp in the proportion of 15 to 30 per hundred.

Fig. 1 illustrates a *pareuse* used for linen, jute and fine yarn. The warp does not enter the size liquor, but passes between two rollers, A, of which the lower is partly immersed in the size. The upper roller is covered with cloth, and serves to squeeze the excess of size from the yarn. The horizontal brushes, B, vibrate constantly against the yarn in a direction opposite to the movement of the yarn through the machine. This brushing lays the loose fibres and thus smooths the yarn. A current of hot air from the fan, G, facilitates the drying of the yarn, which is then wound on the beam, F.

There is a strong tendency to abandon the *pareuse* for the *encolleuse*, as the last named machine does more and better work. In the case of cotton, however, the *pareuse* imparts more strength and resistance to the yarn than does the other process. In the *encolleuse* the solution is more dilute and thoroughly penetrates the yarn which is immersed in the liquor. The size should not be prepared too long in advance of use and should be boiled but moderately, otherwise the composition may be changed and certain constituents destroyed, the size becoming watery and frothy in the pans.

A well sized thread should be smooth and pliable and the cloth will then have a better appearance and the weight of the warp be notably increased. The ordinary size increases the weight of the warp from 10 to 15 per cent.; medium size, 20 to 30 per cent., and a heavy size from 50 to 80 per cent.

The *encolleuse* consists of:

1. A frame in which the beams are set.
2. A trough containing the size.
3. A drying apparatus.
4. Means for beaming the yarn.

Without doubt drying is the most important part of the sizing operation. There is no good sizing without good drying. Drying can be done in two ways: By direct contact

of the yarn with a heated surface, and by hot air or radiation.

DRYING BY DIRECT CONTACT.

Fig. 2 shows a machine for drying by direct contact. The yarn is immersed in the size in the pans, B, passing under the plunger, C, then between the squeeze rolls, D and E, of which the upper one is covered

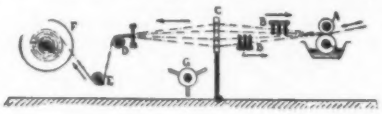


Fig. 1.

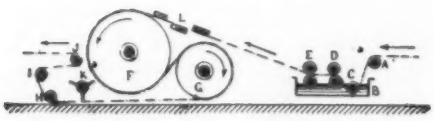


Fig. 2.

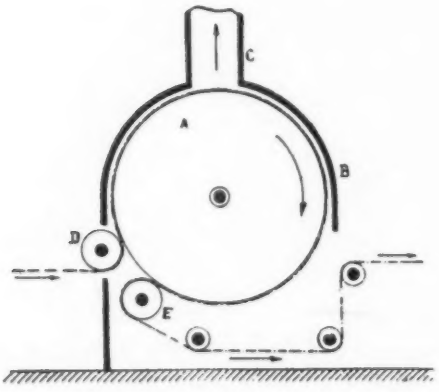


Fig. 3.

with cloth. It is then drawn over cloth covered bars, L, after which it passes around the hollow copper cylinders, F and G. These cylinders are heated with steam at a pressure of 2 to 5 atmospheres which dries the yarn thoroughly. The cylinder, G, is about 60 inches in diameter; the other cylinder, F, is 80 to 100 inches in diameter. Both are mounted loose in the bearings and turned by the friction of the yarn. The fan, K, ventilates the yarn after the latter leaves the cylinder, G.

Another form of dryer built by the Societe Alsacienne des Constructions Mecaniques, Mulhouse, Germany, is shown at Fig. 3. It consists of one large copper cylinder, A, driven by four friction rolls. It is 180 inches in diameter, the width being from 60 to 80 inches. It is covered with a hood, B, in which is placed a ventilating chimney, C. The guide rolls, D and E, are placed so as to bring as

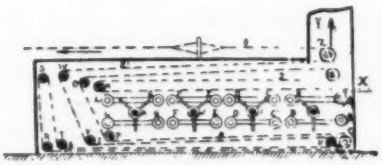


Fig. 4.

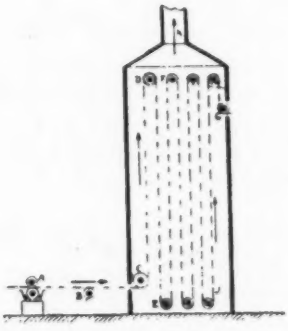


Fig. 5.

great a part of the circumference as possible in contact with the yarn.

Serious difficulties are connected with drying warps by direct contact. It is not suited for wool because of the felting action under the influence of heat, pressure and moisture. It is impossible to stop the machine without the risk of burning or singeing the yarn. The yarn being wound on the beam at a high temperature contracts afterwards, and this causes frequent breakage. It is difficult if not imposible to dry colored warps in this way as

the colors are materially affected by the process. The thread is also flattened more or less, presenting a saw-tooth edge which wears out the harness rapidly. This method of drying also requires a great deal of steam and is accompanied by serious danger of explosion. Drying by direct contact is used only for coarse cotton warp, No. 20 and below.

DRYING BY RADIATION.

This process is designed to remove the difficulties which accompany the direct contact process. The air can hold in suspension a certain quantity of vapor, varying with the pressure of the temperature; the hotter the air the greater is its water absorbing qualities. The influence of the temperature on the air in this respect is shown as follows: At a normal pressure, one cubic foot of air carries:

32° F.	2.3 grains water.
50° F.	3.9 grains water.
68° F.	7.1 grains water.
122° F.	34.4 grains water.
212° F.	123.9 grains water.

The capacity of air to carry water has a limit which is called the point of saturation. As long as it is not saturated it allows the absorption to proceed and absorbs pro rata an additional quantity of water. Once saturated it can absorb no more as long as the temperature remains stationary. If the temperature is raised the air becomes capable of absorbing an additional quantity of water. If the temperature of air saturated at 50° F. is lowered to 32° F., it will lose 1.6 grains of water per cubic foot. If, on the other hand, the temperature is raised to 120° F., it will gain 27.3 grains of water per cubic foot before the limit of absorption is reached. It is, therefore, an error to suppose that air evaporates water in inverse proportion to the amount of water it already carries. As in the above case, the air containing 3.9 grains of water per cubic foot would evaporate rapidly at 122° F. and not at all at 50°

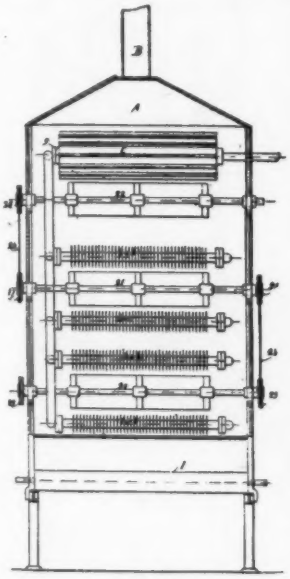


FIG. 6.

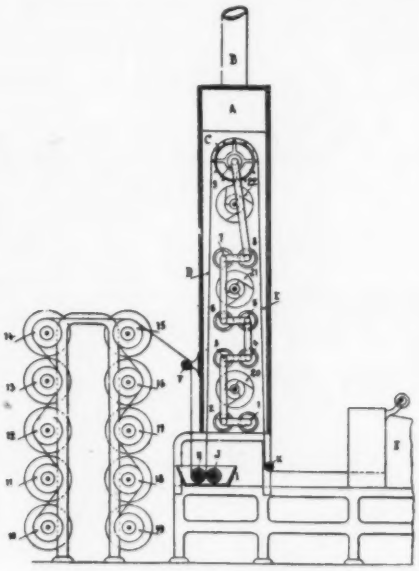


FIG. 7.

The principle of evaporation can be stated thus: Air evaporates water in direct proportion to the distance from the point of saturation. Very hot air has no power of further evaporation when at the point of saturation, while cold air, if dry, will cause rapid evaporation of water. By conforming to these principles of evaporation a very thorough and uniform method of drying is obtained. To this end sized warps are circulated in a closed chamber, which is heated with corrugated

steam pipes or other radiators. Whatever may be the means employed the dry air is heated as it enters the chamber. Its absorbing power is raised and coming in contact with the yarn it evaporates the water from the yarn and gradually becomes saturated. It is then carried out of the chamber by suitable means and dry air takes its place. By this method the air acts as an intermediate agent between the source of heat and the material to be dried, and the objections to the direct contact of the yarn with the heating surface are overcome. The heat serves to increase the absorbing capacity of the air by raising its point of saturation.

The heating chamber may be horizontal or vertical. Fig. 4 shows a machine with a horizontal chamber. The warp, X, passes over the rolls, M, N, O, P, Q, R, S, T, U, V, W and Z, forming nine superimposed layers of yarn. The air is heated by the radiators, A, B, C, D, E, F, G and L. The ventilators, H, I, J and K, create a current of air which passes from the chamber through the chimney, Y. This arrangement possesses a fundamental defect. The mist or vapor rises from all parts

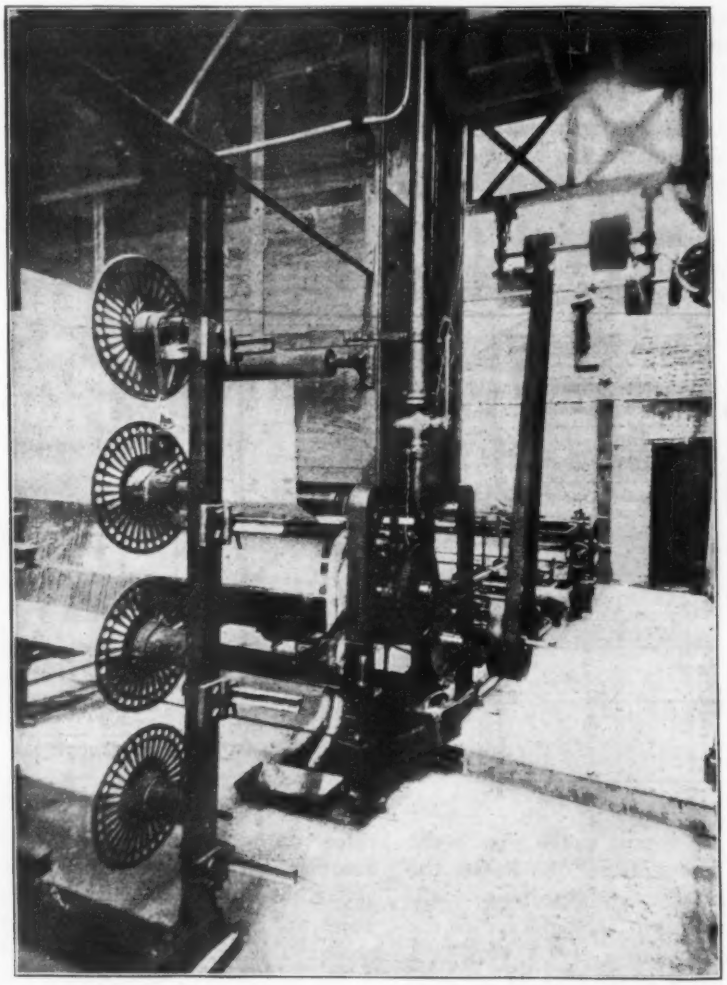


FIG. 8.

of the warp and the current of air cannot wholly prevent the natural tendency of the moisture to rise. Now the layers of yarn being superimposed it follows that layers 8 and 9 will come in contact with saturated air. The moisture in the air condenses on these upper layers and the result is an irregularity in the drying of the warp. Moreover, it is very difficult to mend broken threads during the passage of the yarn through the chamber. The winding of the yarn around so many rollers causes considerable tension, which is injurious to the yarn.

Whatever may be the evaporating capacity of the succeeding layers it is necessary that in the space of 4 or 5 yards between the size pan and the roll, M, the warp should be dried so that the threads will not adhere when they come in contact with each other at the latter point. Various devices have been tried with unsatisfactory results to overcome this difficulty. In order to have the yarn as dry as possible when it comes in contact with the first roll the distance the warp traverses before it reaches this roll should be as great as possible. There is, however, a limit in this respect, because the sag of the yarn in a long chamber is considerable, and an increase of the length of the chamber causes the machine to occupy greater floor space. As a consequence both short and long chambers are open to serious objections, and the consumption of steam increases faster than does the production by lengthening the machine. It should not be forgotten that the yarn passing from the size pan comes in immediate contact with the hottest air. The size is dried superficially before it has become incorporated with the fibres and, as a consequence, a large part of it is subsequently converted into dust with the slightest friction.

The horizontal chamber is not rational. The yarn containing the most moisture comes in contact with the hottest air and there is a direct conflict between the horizontal direction which the air must take to escape from the chamber and the perpendicular direction which it naturally follows. The principle of the horizontal chamber is, therefore, defective, and, whatever may be the methods of ventilation, the heating of the air and use of the heat remain irrational and incomplete.

In order to remedy these conditions the vertical chamber, Fig. 5, has been adopted. The warp leaving the size cylinders, A, passes into the vertical chamber and over a series of rollers, C, D, E and F, of which the first, C, is corrugated. It passes from the chamber over the roller, G. The ventilator, K, allows the damp air to escape. In this machine the heating is also irrational and incomplete. The contact of the sized warp with the roller, C, occurs too soon. Likewise, the repeated passages of the yarn back and forth cause an excessive tension.

A new method of drying warps in vertical chambers has recently been brought out and promises to give very satisfactory results. It is shown at Figs. 6, 7 and 8. It consists of a large vertical chamber, A, about 40 feet high and having a ventilator, B, at the top. The chamber is heated by a series of horizontal steam pipes, 1, 2, 3, 4, 5, 6, 7 and 8, which are connected with elbows at their extremities. The last one, 8, is joined to the tube, 9, which also serves as an axis for the horizontal drum, C. The latter has a series of wings on the outside as shown. Owing to the great height of the chamber, the drum, C, is a considerable distance from the sizing rolls, H and J, and this favors the sizing and drying process. Having passed over the carrier roll, F, the yarn is immersed in the size, the excess of which is removed by the squeeze rolls, H and J. As it is drawn from these rolls it passes in front of the heaters, 2, 3, 6 and 7, and the ventilating fans, 20, 21 and 22. These fans force the hot air from the yarn, creating a vibrating motion which facilitates the drying.

The damp air passes directly to the chamber, B, without further contact with the yarn. After passing from the chamber, C, the warp passes down in front of the heaters, 8, 5, 4 and 1, and the ventilating fans, 22, 21 and 20. The warp is dried during this descent, after which it passes over the roll, K, to the beam. The distance between the size rolls and the first contact, at C, is three times as great as in any horizontal machine now in use, and

the increase of production is in the same proportion.

This machine is suited for all kinds of work. In sizing fancy warps the yarn can be separated into two sheets of different colors so that the two kinds of yarn do not come in contact with each other until after the yarn is dried; by this arrangement the colors are not injured by contact while the yarn is wet. The yarn and air enter the lower part of the chamber together and are thus subjected to a temperature very little above that of the outside atmosphere. As the warp travels upward the temperature increases progressively, the maximum being attained at the top of the chamber. The air, as the temperature increases, absorbs an increasing quantity of water; the point of saturation is being constantly moved farther away, thus preventing condensation. This rational arrangement results in a great economy of steam and the size is thoroughly incorporated in the yarn.

We examined the warp as it came from this dryer and noticed that the dust escaping from it was insignificant. In other sizing machines a considerable quantity of dust falls from the warp and it is estimated that the new machine will save from 20 to 30 per cent. in sizing material. As the yarn comes in contact with the rolls but two or three times the tension on the warp is very slight and the elasticity of the yarn is thus preserved. As a consequence the machine handles tender yarn very successfully. The arrangement of the parts enables threads to be easily mended. The temperature of the chamber is relatively low and as a result the atmosphere of the size room is in a much better condition for the operatives. Following is a record of the production of this machine.

Woolen warp, 4890 ends No. 18 yarn, 15 yards per minute.

Cotton warp, 5240 ends No. 12 yarn, 14 yards per minute.

Cotton warp, 1620 ends No. 50 yarn, 50 yards per minute.

The resulting economy is shown as follows:

OLD METHOD.

3 horizontal sizing machines, 3 operatives, 5.50 fr. per day, 300 days	4950 fr.
Motive power, 600 fr. per year per machine	1800 fr.
Heating, 1440 fr. per machine	4320 fr.
Belts, cables, repairs, lighting, oil, 300 fr. per year	900 fr.
Floor space, 144 sq. m., at 30 fr. (4320 fr.) 15% of this amount	648 fr.
Starch, 30 kg. per day per machine, at 30 fr	8100 fr.
Total	20,718 fr.

NEW METHOD.

1 operative at 5.50 fr. per day	1650 fr.
Motive power	600 fr.
Heating	1440 fr.
Belts, cables, light, repairs, etc	300 fr.
Floor space, 40 sq. m., at 30 fr. (1200 fr.) 15% of this amount	180 fr.
Starch, 8100 fr., less 25%	6075 fr.
Total	10,245 fr.

The saving resulting from the use of the new machine amounts, therefore, to $2,094.-60 (10,473 francs) per year.—Translated by Textile World Record.

Broche Loom. C. A. Roscher, Neugersdorf, Germany. A device for broche work on looms and is designed for very fine work. It is said to work well at a high speed, something that has not been possible with fine broche work heretofore.

Tentering Machine. Moritz Jahr, Gera, Germany. A tentering machine by which the cloth is fed to the pins on the chain by feeler couplings instead of movable chains. It is claimed that when the cloth is transferred from the fallers to the pins there is no danger of disarrangement, and that the cost of the machine is considerably reduced by the new construction.

There are nearly a thousand known textile fibres, but only a few of them, cotton, wool, silk, and in a minor degree, flax, hemp, jute, and ramie, are of any general interest.

The artificial organic dyestuff industry originated in England with the discovery of the lilac color, mauve, by Perkin in 1856. In 1859 Verguin made magenta or fuchsine.

RAINPROOF COVERTS AS MADE IN YORKSHIRE.

BY S. B. H.

I do not know what sentiments United States manufacturers entertain respecting rainproof coverts, but here in Yorkshire they are as popular as ever, and gray shades largely predominate. Our autumn trade is just beginning with retailers, for even a casual look into their shop windows shows at once where their ideas lay, and already light weight rainproofs are being brought out in a very satisfactory way.

It was my privilege the other day to be in company with one of the most successful makers of these goods, and a most interesting conversation I had with him. Of course, as he said, wholesale houses were clamoring as much as ever to get prices down, but with the dearness of wool and the prospect of gaining no relief for the next few months, to lower prices was indeed impossible. Some handsome things are being made from 60 cents, 6/4, and upwards, and when I tell readers that even these 60-cent rainproofs are made of one thread Botany white worsted, they can see that there is a little ingenuity manifest in the composition of such cloths. Of course, the weft is composed of about 80 per cent. mungo and 20 per cent. of cotton, while even the woolen thread that is twisted with the white worsted is also a mixture of mungo and cotton.

However, I want today to look at rainproofs a little better in quality and style than what are used for "slopping" purposes, it being more medium grade fabrics which are used by the average man in the street that today I want to consider. There is always to my mind more satisfaction in producing medium and better class fabrics than "groveling in the muck" with low goods of the Morley and Batley order, for not only is it more unsatisfactory from an employee's standpoint, but there is considerably less profit to the manufacturer. Our fabrics today are all the more interesting because the manufacturer gladly supplied me with full particulars respecting their manufacture.

Cloth 1 is simply a plain rainproof tweed, of nice quality, and has sold very largely both for men and women's wear. The warp is all black and white worsted, and is made out of all fine worsted, 2/48's, and set 60 threads per inch in the loom. The weft is all black, spun to 2.8 runs, 45 picks per inch. The weft is composed of six parts mungo and one part cotton. The cloth is beautifully finished, is made soft and cloth-like, weighing 16 to 17 ounces and sold at 78 cents per yard. The weave is shown at Fig. 7.

Fig. 1.

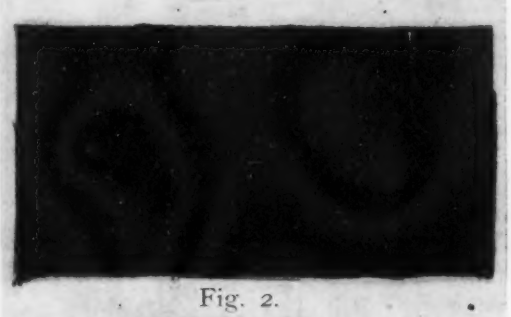


Fig. 2.

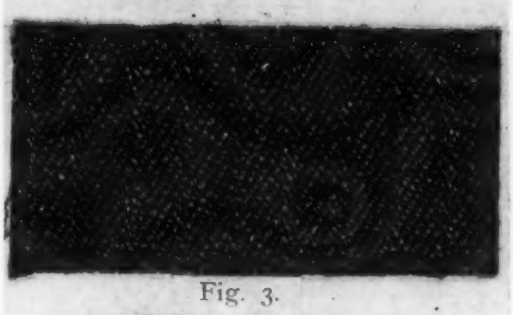


Fig. 3.

Cloth No. 2 has been a still more popular cloth and known as a "herring-bone" rainproof. This class of fabric is a long way the

best in demand, the weave employed simply being the four-end twill, eight threads being drawn one way and eight threads the other. Of course the veriest novice knows that the more threads drawn one way and then the opposite alter the width of the herring-bone

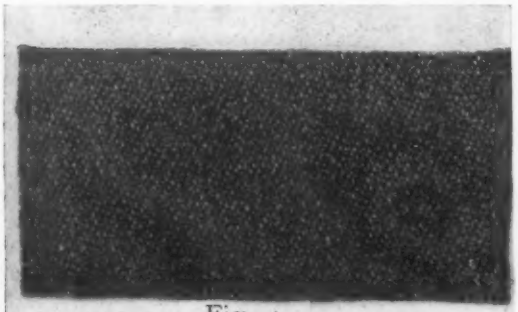


Fig. 4.

Fig. 5.

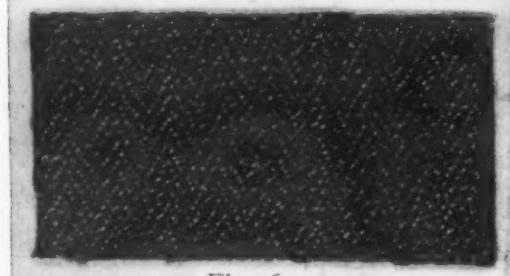


Fig. 6.

stripe, but the most familiar widths are made of 8, 12, 16 and 20 threads. Here again we have exactly the same quality of twist used as in cloth No. 1, except that it is set rather finer in the loom, the number of threads being 68. The weft is all black and is composed this time of three parts Berlin and one part mungo, which is spun to 3.2 runs, the number of picks being 45. This cloth is 16 ounces and sold at 84 cents.

Cloth No. 3 is still better, rather heavier in weight, but all the same has been a good selling cloth. This is made of green and white twist and is woolen throughout. The twist is composed of 80 per cent. of wool and 20 per cent. of cotton, the green is spun to 43 skeins and the white to 68, then both twisted together. The shade is a very good one, and in grays, especially, the stuff has sold well. It is set in the loom to 64 threads. The weft is dark green, the composition being two parts mungo and one of cotton, spun to 3.6 runs, and woven with 38 picks per inch. It will be seen by carefully looking at the design that there are 4 threads drawn one way and sixteen the opposite, which gives a very quiet yet satisfactory appearance. I call it a good rainproof and certainly it is deserving the attention of American manufacturers. The price is $1.04, 18 ounces. The weave is shown at Fig. 8.

Cloth No. 4 is simply a solid plain slate cloth, the twist here being slate and white, made after cloth No. 3 as regards the twist, but set 54 inches in the loom. The weft is all slate composed of three parts wool, two parts mungo, and one part cotton. It is spun to 5.6 runs, 54 picks per inch, and is sold at $1.14 per yard, 17 ounces. The weave employed is a five shaft Venetian. This cloth is a very smart one and is largely used for evening parties and dust-coat purposes. The weave is shown at Fig. 9.

Cloth No. 5 is, to my mind, the best in the bunch, it being more stylish and popular than all the rest. This is due to the introduction of a cord in the warp; this style of cloth being very largely adopted by some manufacturers. I would suggest the use of this cord arrangement more largely than has been the case in years gone by. One of the best and most successful manufacturers of men's wear three-quarter trouserings introduces this cord arrangement to make stripes very largely indeed, and some splendid effects he obtains. In this cloth it will be seen, at Fig. 10, that we have ten threads Venetian and then five threads of cord, the illustration furnishing the reader with some idea of the cloth. It presents a very smart appearance and is a pop-

ular cloth today. The make-up is a little more difficult, but the following are the particulars: The warp is composed of 11 threads black and light gray twist, 3 threads Oxford warp, and 1 thread twist, total 15 threads. The making of the twist is as follows: The woolen thread is spun to 8.6 runs, and then one thread of white worsted, single 60's, is twisted round the thread of woolen, this producing a nice shade of twist. It is set 64 threads in the loom. All black weft is used, the blend being made in the same proportion as cloth No. 4. It is spun to 5.2

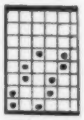


Fig. 7

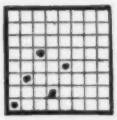


Fig. 9.

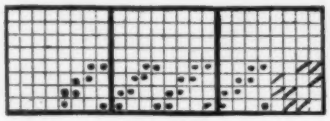


Fig. 8.

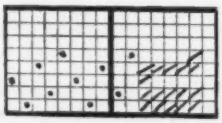


Fig. 10.

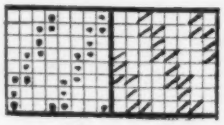


Fig. 11.

runs, with 57 picks per inch. This cloth is 19 ounces in weight, and sold at $1.20 per yard. I consider this cloth the best. The design is as follows:

Cloth No. 6 is of a different stamp altogether, and perhaps a little more old-fashioned than the previous one. Still it is worth considering, because it is the cloth to sell in the country among farmers and working class artisans. It is heavier, more bulky, and will stand more knocking about than any of the previous cloths. Here again it is composed of all black and white twist. Practically the woolen part of the thread is composed in the blend of one part wool, one mungo, and the other cotton, and is spun to 5.2 runs. This is twisted with single 48's white worsted. It is set in the loom 52 threads per inch. The weft is all black, and the same used as in cloth No. 2, spun to 16 skeins and 66 picks per inch. This is 24 ounces in weight. The weave is shown at Fig. 11.

SILK WEIGHTING.

BY M. PETSCH,
In Deutsche Faerber Zeitung.

In the second half of the last century the process of weighting silks with salts of tin in combination with catechu was extensively employed. Soon after bichloride of tin was used and bright shades were obtained with

FIG. 1.

very heavy weighting. The silk, however, suffered materially in the process. Later on, better methods of weighting were discovered. Bichloride of tin was used in combination with phosphate of soda and soda water glass by which means an increase of 15 per cent., and even more with dyed goods, was obtained. At the present time silk is weighted not only to increase the weight, but also to obtain a bulky thread which is possible only with heavy weighting.

Fig. 1 is a microscopical view of a filament of silk before and after weighting. The small fibre at the left has been boiled off; that at the

right is the same material weighted to 120 per cent. Such a heavy percentage of weighting, which results in a heavy deposit of tin oxide, is very injurious to the silk. This deposit is easily discovered by means of the X-rays.

der the X-rays, according to the degree of weighting.

The weighting of silk cannot be discovered by examination of the material with the naked eye or by handling the goods. The injurious effects of the process develop when

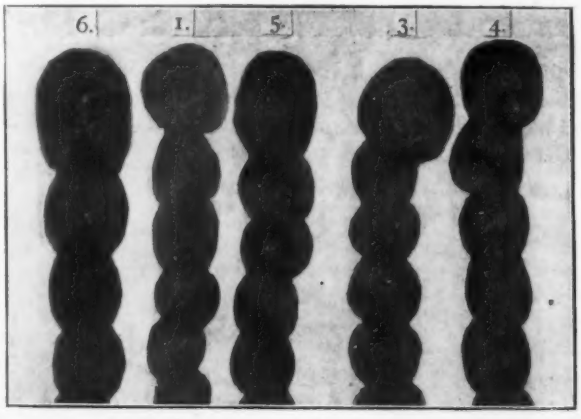


FIG. 2.

Figs. 2 and 3 show different samples of silk as seen under the X-rays. No. 1, unweighted, No. 2, weighted 10 per cent. with tannic acid, and No. 3 dyed black without weighting are transparent. Nos. 4 and 5 col-

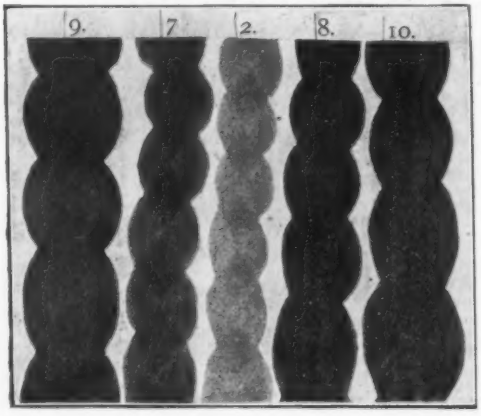


FIG. 3.

ored black with nitrate of iron and tannic acid, No. 6 weighted 70 to 80 per cent. with iron, tin and tannic acid, Nos. 7, 8, 9, and 10 undyed and weighted 60, 80, 120, and 160 per cent. respectively, are more or less opaque un-

the silk is worn. Places which have been exposed to perspiration disintegrate quickly. Likewise light and drops of liquid, especially if it contains salt, destroy the weighted silk. The garment dyer and cleanser finds in weighted silk many defects resulting from perspiration, perfume and other liquids that have come in contact with the goods. He is often called upon to pay for such damages to garments, when, in fact, the fault lies in the weighting of the silk.—(Translated by the Textile World Record.)

REELING AND WEIGHING ROVING.

The efficiency of a manufacturng plant depends not only upon the adoption of the best machinery and processes, but also upon the perfection of details of management, the use of improved tools and appliances and the removal of a large number of obstructions, which may appear slight but which get into the gears of the organization, interfere with production and damage the product. A device which comes under this head has been constructed at the textile department of Clemson College, of which J. H. M. Beaty is director. It is a stand for supporting the bob-

bin when reeling roving to determine its size.

Fig. 1 shows the rough wooden stand so often seen in the mills. Fig. 2 is a neat iron stand, designed at this school and is very convenient and sightly. The upright rod is fixed in a cast iron base and is high enough to allow the guide, for supportng top of skewer, to be adjusted up to 18 inches, a little higher than a skewer for a 12 by 6-inch slubber-bobbin. This guide can be run down to the base, enabling one to use a skewer of any length. The front of the upright rod has a small featherway and the guide a feather to correspond. This arrangement keeps the hole in the guide centred over the step in the base. The stand is simple and cheap and matches well in finish and appearance with yarn reels, etc., now used in our mills.

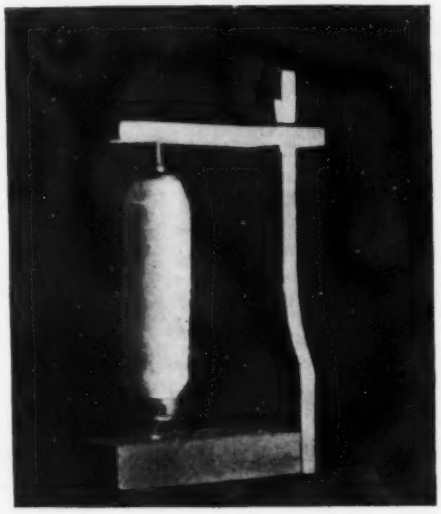


FIG. 1.

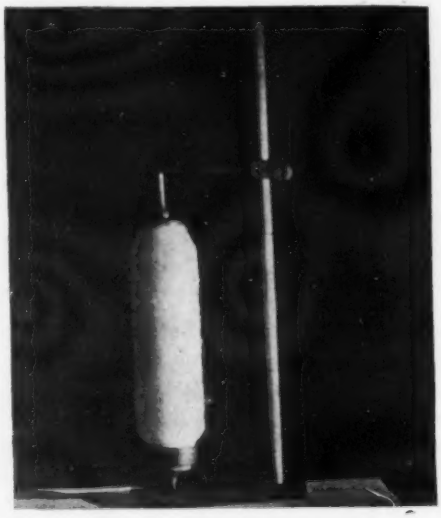


FIG. 2.

CARD CLOTHING WIRE FOR FINE AND COARSE STOCK.

BY SAM DRIVER.

The way the batches come along now in most woolen card rooms makes it a hard task to name just the right size of wire that would be best for general use. One batch may be a nice fine all wool lot; the next may be a mixture of very coarse wool and shoddy, and the next of fine wool and shoddy, or it may be a silk mix or a hair mix, etc. The carder hardly knows what will go on next. If batches of the same quality could follow each other, much better and more even roping could be made and would save the carder a good deal of trouble and much valuable time, and waste would be saved to the interest of the company. When batches keep jumping from one run to six runs and vice versa. it is no wonder there is so much trouble with uneven roping.

When the carder has a set of cards on a 500 pound lot, 5 run warp running just to suit him, the lot is nearly run out, and the next lot may be 2 1/2 run coarse wool and shoddy or some other kind much different from the 5 run lot. I should recommend the following scale and number of wire for a set of cards for general run of work:

FIRST BREAKER.

Feed rolls, if not steel rings, which are decidedly the best.

Feed rolls top and bottom, No. 18 convex or diamond point, straight steel wire.

Tumbler, No. 33 wire, steel.

First two workers, No. 32, the remainder No. 34 steel wire.

Strippers, No. 32, steel wire.

Cylinder, No. 33, the sheets steel wire.

Doffer, No. 33, steel wire.

Fancy, No. 30, sheets or filleting, steel wire.

SECOND BREAKER.

Feed rolls, top and bottom for creels, No. 18, convex or diamond point straight steel wire.

Leader-in, No. 24, diamond point steel wire.

Tumbler, No. 33, steel wire.

Two workers, No. 34, the remainder No. 35.

Strippers, No. 32.

Cylinder, No. 34, sheets.

Doffer, No. 34.

Fancy, No. 32, sheets or filleting.

FINISHER.

Apperly feed rolls No. 24, bottom and No. 26 top, diamond point straight steel wire.

Leader-in, No. 24, diamond point steel wire.

Tumbler, No. 34.

First two workers, No. 35, the remainder, No. 36.

Strippers, No. 34.

Cylinder, No. 35, sheets.

Ring doffer, No. 35.

Fancy, No. 34, filleting.

CARD CLOTHING FOR A SET OF CARDS ON COARSE STOCK.

If a set of cards is running permanently on coarse wool or coarse wool and shoddy mixed, the number of the wire should be,

FIRST BREAKER.

Feed rolls, if not steel rings, No. 18, convex wire.

Tumbler, No. 32.

Two workers, No. 30, the others No. 32.

Strippers, No. 30.

Cylinder sheets, No. 32.

Doffer, No. 32.

Fancy, No. 30.

SECOND BREAKER.

Feed rolls, No. 18, convex or diamond point wire, straight tooth.

Leader-in, No. 24.

Tumbler, No. 32, steel wire.

Workers, No. 33.

Strippers, No. 30.

Cylinder, No. 33, sheets.

Fancy, No. 32. sheets or filleting.

Doffer, No. 33.

FINISHER.

Bottom rolls Apperly feed, No. 18, convex or diamond point wire, straight tooth.

Top rolls Apperly feed, No. 18, convex or diamond point wire, straight tooth.

Leader-in, No. 24.

Tumbler, No. 34.

Workers, No. 34.

Strippers, No. 32.

Cylinder, No. 34, sheets.

Ring doffers, No. 34.

Fancy, No. 33, filleting.

LOW GRADE WOOLENS.

BY "DELAINE."

(Copyright, 1904, by Lord & Nagle Co.)

II.

The Yorkshire textile industries are highly specialized, the woolen industry in particular. Of these perhaps none are more so than the low grades, where the production of something out of nothing is almost accomplished. The specialization commences with the rags from which the shoddy is made, as

FIG. 3.

FIG. 4.

FIG. 5.

detailed in the first article of this series. No greater mistake can be made than using a bale of rags unsorted, and the idea that rags need no preparation is most fallacious. In some of the large rag warehouses several hundred sorters may be seen at work separating the various qualities and colors. Rag merchants follow this course, afterwards selling the respective assortments to each manufacturer, according to the class required for his special goods. The immense variety of goods could not be produced otherwise.

Most of the rags are from wool, carded, or combed, but many contain cotton warps, while others have cotton blended with wool and carded together. Unless these are separated, they cause great inconvenience and spoil the successful manipulation of the stock. For instance, French cashmeres are from pure wool, while the bulk of the Bradford cashmeres have cotton warps. Rag machines cannot open the cotton threads which spoil the carding and spinning, causing immense waste, and appearing in the woven cloth. Yet, when these rags are separated, the cotton threads are destroyed by carbonization, leaving wool of considerable value, known as "extract merino." In Yorkshire there is a syndicate of four firms, now amalgamated, which make this extraction their special business. Their profits in 1903 approached $90,000.

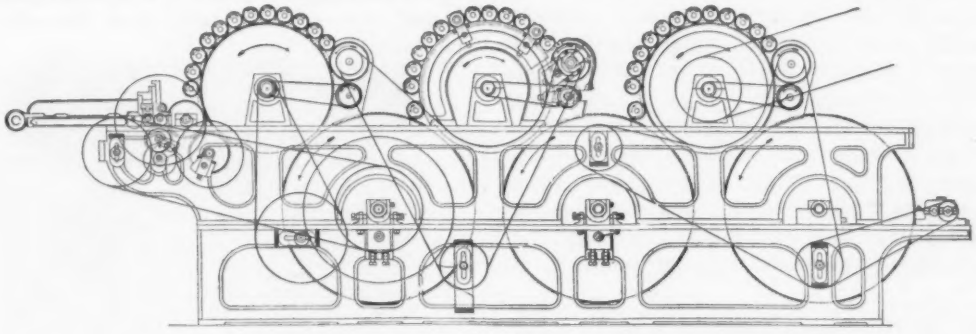


FIG. 6.

When the merino rags have been through the carbonizing process, whether by sulphuric acid or acid gas, they are dyed numerous shades. When dried they are passed through the rag machine and afterwards scribbled, or carded, with an addition of 10 or 15 per cent. of fine merino wool in shades to match. The outcome is a wool shoddy of the first order and of the value of 12 to 18 cents per pound. A portion is for home consumption, but this material finds great favor on the Continent of Europe, especially in Germany and Russia. It is there employed for the face weft of presidents, beavers, mantle cloths, etc., where a faced or brilliant finish is applied. It is also splendid material for the wool costume cloths so fashionable in current times.

Such material and all others from worsted rags may be left with good length of staple by giving proper attention to the rag machine during the pulling of the rags. The speed of the cylinder should be reduced to 300 revolutions per minute and the teeth set one quarter of an inch from the feed rollers. In fact, they are only half opened, leaving the threads to be further opened into good fibre by the scribbling which follows.

Figs. 3, 4 and 5 show the teeth of the rag machine at various stages. Fig. 3 shows the new teeth, which are flat at the point; the threads are cut by the sharp edges. Fig. 4 shows the teeth worn down at one side by five to ten hours' work when they have a chisel point. The cylinder is now reversed so as to bring the opposite side of the teeth into operation. The chisel point again cuts the fibres, but when in turn worn off at that side, the points assume the form of Fig. 5, termed needle point. The needle point is the best condition for separating the threads without cutting them, and in order to retain that condition the cylinder should be lifted out and turned round every five hours. By wearing the teeth first on one side and then on the other the needle point is maintained.

Mungo is produced from hard rags of fine quality only. All soft and coarse rags produce shoddy. That is the correct distinction, and it naturally follows the manipulation of the rags must be varied to suit the product. For mungo the fine toothed cylinder is required; the speed is 600 revolutions per minute, and the teeth are set only one-eighth of an inch from the feed rollers. Mungo is shorter than shoddy and is em-

ployed more for plain goods, piece dyed, than for fancy tweeds. Mungo requires wool to support it and a good blend for doeskin cloths is composed of two-thirds wool and one-third mungo.

WORSTED WASTE.

Combed wool is the basis of the worsted trade, a department which is distinct from carded woolens. Only a part of its own waste can be used in worsted stock. The waste products from the worsted mills are valuable as raw material for the carded woolen trade because they are obtained from pure wool. They are cheaper than pure wool and answer the purposes equally as well for most classes of low and medium woolens when blended with mungo or shoddy. Worsted yarn waste is useless until opened and reduced to its original condition of wool, as the length and strength of the waste threads would break

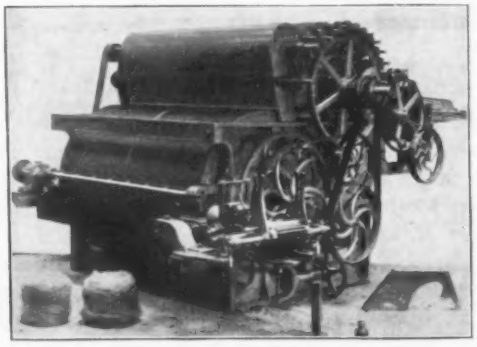


FIG. 7.

the card-wire of woolen machinery. For the reduction of worsted waste to the condition of short wool, rag machines are useless, as the threads wind themselves around the cylinder. A special class of machinery has been invented for this purpose and brought to great perfection. Fig. 6 shows a garnett machine. Machines are also made with either one or two cylinders. Fig. 7 is a view of the one cylinder machine made by the same firm.

By the combined use of rag machines and garnett machines, one English woolen manufacturer accumulated a fortune of nearly $1,000,000 and built his second mill before he bought his first bale of wool.

ENGLISH NOTES.

(From our Special Correspondent.)

The export trade is far from being the smallest factor in British textile success. Where so much depends upon the size of the output, it follows that large markets are a necessity. Nothing but huge sales make a low cost of production possible and it is perhaps wonderful that little Britain should fare so well when so many tariff doors have been slammed in her face.

There must be a limit to the expansibility of the world's trade, but as yet Yorkshire cannot be said to have found it. Mills that ought, theoretically, to have been ruined by the Dingleys of America and Europe are very much alive. They are pouring their goods into the warehouses of the merchants who sell in the farthest East. The great native populations of Asia have proved excellent customers for those low goods in the production of which England leads all other countries.

American producers will be interested to know what England sells in the East. The market in cottons is public property; not so woolens, however. Let us see what Yorkshire shippers are now sending in great bulk to India, Burmah, China and Japan. At the end of September one Bradford house received an order for 1,000 pieces, in one line, of army cloths for Japan, weighing 24 ounces per yard and costing 30 cents for 54 inches. In other words, about 35 tons of cloth, or 55,000 yards in length, or $17,000 worth. These are cotton-warp goods dyed to a common dark blue of Batley manufacture. They are twills of a soft, lofty handle, strong and distinctly warm to the touch. Several such orders have been received and there may be a few yet to come. Though the natural business with Japan is in abeyance, Yorkshire woolen firms are receiving these monster orders for urgent despatch.

Much of the woolen cloths for these markets bear only a distant relation to wool. To handlers of superior goods the eastern stuff appears as dreadful rubbish. None the less it sells largely and carries a certain profit. Shanghai, for instance, is a good port for

black meltons of 32 ounces weight at 48 cents, mill price. These are made wholly from willowed soft rags and cotton warps. The cloths have a firm and mellow handle, with enough hot-pressing to make the surface smart. Rangoon takes quantities of woolen prints in various weights. A low-class melton fabric in its natural color, undyed, is printed with checks of one or more colors. These may be familiar to some under the name of Birstall prints. Their smell is

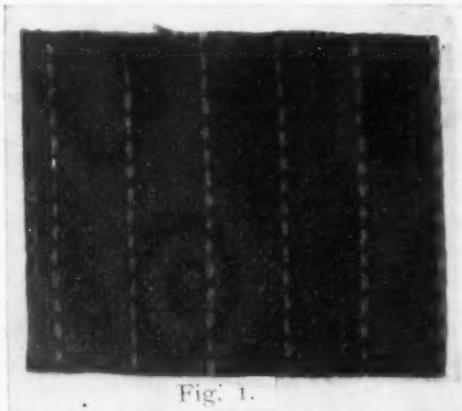


Fig. 1.

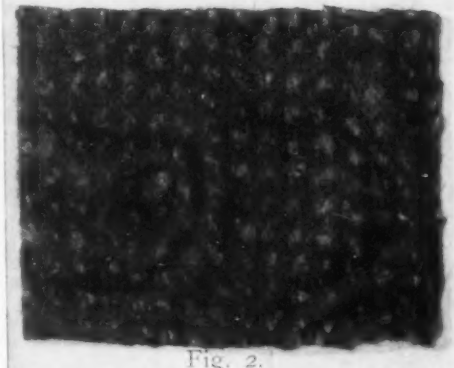


Fig. 2.

that of a peculiarly pungent writing ink, their strength is doubtful and their wearing qualities are in no dispute, for the cloths rot with wetting and must speedily lose such of smartness as they possess at birth. Natives presumably find the articles as good as they expect. They pay the mills between 18 and 36 cents per yard of from 48 to 54 inches width, the price varying according to weight and quality.

The typical Leeds melton has undergone many primitive adornments during the recent reign of the zibeline. For eastern purposes many of them have been relieved with a line-stripe of cotton at half-inch intervals, as shown at Fig. 1. In 8 ounces weight, 48 inches width, quantities have been made at 16 cents. At a pinch so light a fabric may serve as a flimsy, tropical suit for men, for dresses for women, or for lining cheap overcoats in warmer countries. Rangoon has accepted large quantities of these striped cloths at 30 cents for 14 ounces, 50 inches. The same makes have been used in domestic trade and by sundry foreign customers in many parts. Besides, for Rangoon, there are the classic Morley goods, called unions, with teazled face and boiled finish. In black these serve all purposes from covering cheap coffins up to clothing peasants in Europe and natives in Asia with a fair imitation of the broadcloth of our grandfathers.

With these there goes a proportion of Colne Valley tweeds. A fair example of many is shown at Fig. 2, manufactured by C. & J. Hirst of Huddersfield, and sold for 44 cents per 6/4 yard, 21 ounces. Though the materials have not the eclat of Scotch tweeds, they are not so far behind more expensive imitations of their anti-types. No photograph gives a notion of the full, rich feel that a cloth at 44 cents, 21 ounces, 54 inches, nor of the wiry firmness so suggestive of long wear that is to be bought in stripe designs at 36 cents for the same dimensions. No detailed description enables anyone to straightway go and duplicate the goods in all their perfection. There are tweeds that at a moderate computation look to be worth twice their money. Cotton just supplies what the wool and waste lack. It would be possible for a buyer who did not dissect the warp to declare that no cotton was present. To all outward semblance there is not ten per cent. of cotton in the fabric, and the buyer is unable to know that the stock has come off the card at the rate of a pack (240 pounds) a day, or that the skilful carder gets off exactly the weight in yarn and oil that went in as raw material.

Management and a huge turnover explain these Colne Valley triumphs. Taking weav-

ing at cost, and seeing that its cost is little—the producers of tweeds of this type aim at making money out of the cards. It is only right to add, also, that their manufacturers do make money handsomely year after year.

In fine cottons, bound for the East, and for that matter, for all open markets, a word for the mercerized cotton Italian is due. Eighteen cents for 31 inches wide of cotton, mercerized and Schreinered, is a medium price. The goods are dyed to the most delicate of hues, and to compare them as they come from the finishers' hands with silk is not at all out of the question. The pieces are liable to the serious defect of creasing, from which they never wholly recover in wear. Seen rolled for export, however, they defy criticism, and to see them is to understand why they sell.

While this eastern trade has been brisk all this year and all last, the domestic business is seriously at fault. England shares with most other countries a diminution in the confidence of capitalists. While commodity prices are high, and however they are tested their height relative to the obvious demand is remarkable, capital is timid. We are not finding that great enterprises are launched readily. Iron trade is bad. Along the rivers numbers of ship-yards, forges, bridge-works and so on are growing less rather than more busy. Hence comes it that the buying public becomes less capable of meeting the exorbitant advances in wool values that have gratified the hearts of growers and holders. As the condition is more or less general, it should not be lost to the view of those who would forecast the wool market. Except for the vital capacity to pay the price, there are several good arguments at the disposal of bulls. The bear point is the legitimate one that, with few exceptions, all countries are alike in this respect, that values are already excessive.

Prices of tops are showing first symptoms of weakening. The decline may be no more than a momentary one, but merinos have slipped back approximately one halfpenny, and crossbreds one farthing, in Bradford. Joined to this is a general opinion that prices are out-running the constable. Even in the hosiery trade, where demand is reasserting itself, the margin for manufacturers is an almost imperceptible one.

A CLOTH SINGEING MACHINE.

There has recently been patented in this country a plate machine for singeing cloth, which embodies some interesting features. As described by the inventor, the cloth is drawn over a heated singe-plate, which may be in the form either of a stationary plate or revolving cylinder. These singe-plates have commonly been constructed with a smooth surface, over which the cloth is drawn. It has been found from practice, however, that with such plates the destruction of the nap of the cloth is due more to dry distillation or charring than to actual combustion, owing to the fact that the smooth surface of the singe-plate does not permit sufficient air to enter between the cloth and the plate to support combustion.

As a result the singed face of the cloth becomes more or less discolored or smutted, thereby requiring a greater amount of bleaching to whiten it. It has been attempted to obviate this difficulty by making the cloth-engaging surface of the singe-plate with ribs forming between them recesses for the purpose of admitting air to the under side of the cloth to complete combustion. So far, however, the only attempt thus to introduce air between the singe-plate and the cloth consisted in forming on the cloth-engaging surface of the singe-plate a series of paralled ribs extending clear across the plate and having between them air-ducts. While this construction will partially overcome the above-mentioned disadvantage incident to the use of a smooth-faced singe-plate, yet it has never proved satisfactory, because the ducts or channels in the singe-plate were entirely independent of each other and the supply of air to support combustion at any point in the channel was obliged to pass in to such point from the end of the channel and in doing so was obliged to move contrariwise to the products of combustion escaping from said point toward the end of said channel.

The result of this construction is that the central portions of the channel, or those farthest from the edges of the cloth, receive almost no fresh air to support combustion, and the same charring or dry distillation of the nap of the cloth occurs as with the smooth-surfaced singeplate.

A side view of the new machine designed to overcome this difficulty is shown at Fig. 1.

Another feature of the invention relates to the construction of the heating-chamber, of which the singe-plate forms the top; this chamber is so constructed that the plate can be easily removed when it is necessary to replace it by a new plate without tearing the heating chamber to pieces, as is the case with many forms of plate singeing-machines now in use.

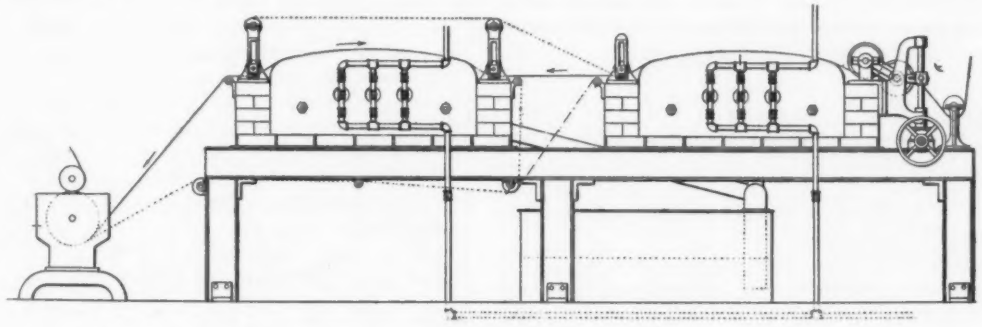


FIG. 1.

Fig. 2 is a plan view of the improved singeing plate, which is provided with a series of channels which are connected with each other by grooves or air-ducts, so that fresh air can enter and pass to all parts the products of combustion pass through the grooves or ducts to other channels, and thus escape to the open

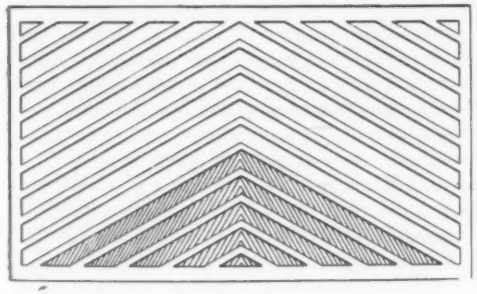


FIG. 2.

air. With this construction it is claimed that there is a constant current of air passing under the cloth from one channel to another through the ducts, and complete combustion of the nap takes place at all points. This obviates the smutting or discoloration of the cloth due to the construction of the smooth-surfaced plate.

TREATING WOOL WITH GLYCERINE.

Manufacturers of rubber coated fabrics are obliged to expose woolen cloth to a temperature of 265 to 285 degrees F. for a period of 15 or 16 hours. This treatment injures the wool fibres seriously. If wool is exposed to a current of dry air at a temperature of 230 degrees F. the moisture it contains is evaporated. This is the process adopted in conditioning wool. If the temperature is raised to 265 degrees the fibre becomes yellow and tender. J. Persoz has made some experiments in order to discover means for avoiding this difficulty, and has found if the wool fibre is saturated in a 10 per cent. solution of glycerine the injury to the material is avoided. The solution is heated to 104 degrees F., and after saturation the wool is dried in the open air. It is found to contain 13 per cent. of pure glycerine. With the wool thus treated a portion of the glycerine evaporates, but enough remains to protect the fibre against the higher temperature.—Laines et Cuirs.

According to Pliny the Gauls were the original inventors of the art of soap making, their best product being a combination of goats' fat and the ashes of the beech-tree.

Questions and Answers.

Under this head we undertake to answer, free of charge, to the best of our ability, any pertinent inquiry pertaining to textile matters received from any regular subscriber to the TEXTILE WORLD RECORD. Questions should be stated as briefly and concisely as possible. Inquiries pertaining to textile processes, machinery, improvements, methods of management, the markets, etc., are especially invited, as well as any legitimate discussion on the views expressed. All inquiries must be accompanied by the name of the person inquiring, not for publication, but as an evidence of good faith.

For reply to questions that are not of general interest to readers of textile journals, such as those relating to the composition of yarns, analysis of fabrics, etc., we will charge the enquirer with the cost of the investigation.

Power for Spinning.

Editor Textile World Record:

Will more or less power be required to operate a cotton spinning room on 17s than on 29s?

Sterling (470).

An experienced cotton spinner answers this question as follows:

In answer to the question as to whether a spinning room would require more power if making 17s yarn, than it would if making a 29s yarn, unless the exact conditions can be given, we can judge the case only from a mechanical standpoint, which must be based on the character of the change and method of making it.

We will assume that the hank roving is changed to bring the draft the same in each case, and that the rings and bobbins, both when empty and when full, are of the same size and weight as before the change was made; in fact the frames are considered as being operated under practically the same conditions, except that the yarn is made heavier and contains a smaller number of turns per inch.

Dealing first with the question of twist, there are two principal methods by which we can reduce the turns per inch. First, by reducing the spindle speed, and second, by increasing the speed of the front roll, or the drawing rolls generally. The first method is not so common as the second, but as the question does not specify which, it will be well to consider both.

If the twist is reduced by reducing the spindle speed, a little less power will be required. A heavier traveler must be used, but its effect on the power is questionable as there is a certain balance maintained between the yarn and traveler, which would bring the two classes of yarn almost to an equilibrium. On the other hand, when increasing the speed of the rollers it may be reasonably assumed that a little more power will be required after the change. The spindle speed will remain the same, while the speed of the rolls and other parts driven by the gearing connections from the twist gear, would be driven faster and thus demand more power. These points must be considered in a question of power, although a practical test may not reveal much difference. J. T. B.

Another spinner writes on the same question as follows:

It would take more horse power to run the 17s. About the first thing we do when making such a change is to change the twist and draft gears. This increases the speed as well as the friction and power consumed. Another element is the weight or load carried by the spindle. Now we come to the traveler. Apparently the most insignificant part of the spinning machine, the traveler, is in fact one of the most important, the pull of the traveler caused by air resistance acting as a brake or retarding force causes friction. The coarser the yarn and shorter the staple the greater is the quantity of flyings, which fills the bearings with foreign matter, making the machinery run harder and consuming power. Festus.

Dressing for Cotton.

Editor Textile World Record:

Please let me know what is put on dyed cotton to make it run well. Philip (484).

This question, like the poor, is always with us. It is best to put nothing in the cotton if it can possibly be avoided. The best way is to dye with the substantive of direct colors when dyeing raw stock. Avoid the use of basic colors or cutch unless there is some special call for them; neither use the sulphur colors unless there is a special demand for fastness. However, if colors of a harsh nature, such as cutch or the sulphurs, must be used in order to get a special shade or a required fastness, then wash well, give three or four pounds of cotton softener or the same amount of soap and dry. If Philip is using logwood to get his black, it should be aged over night, washed in the morning and then softened with three pounds of the softener to one hundred pounds of stock.

Do not run the dyed colors on the cards until they have regained the natural moisture lost in drying. Many carders try to run dyed cotton right from the dryer, and have a good deal of trouble on this account. I have found that dyed cotton will run better if it is not carded for a week or ten days after dyeing.

In the card room there are various methods used to help in the running of the cotton when it is harsh or charged with electricity. Among them are these:

Sprinkle the cotton with water with a broom or garden sprinkler; some use steam jets set in or near the card alleys, also humidifiers; some carders sprinkle ammonia water in the alleys; others make

up 50 gallons of a solution with 25 pounds of Turkey red oil and the same amount of Glauber's salt or common salt, and then sprinkle the cotton with this before it is picked. The better way, however, is to use nothing at all if it can be avoided. Use only those colors that leave the cotton soft; do not work the cotton too long in the dyebath, and in fact, leave the cotton as near its natural state as possible. Some carders set the cards coarser for colored cotton than for white.

Baumwolle.

China Grass.

Editor Textile World Record:

Is China grass imported into this country? Where can I get information regarding the fibre.

Lamoille (469).

China grass is the name of a fibre that is more commonly called ramie. We have published several articles on ramie and would refer our correspondent to the files of the Textile World Record for information regarding the fibre. We believe there is but very little ramie imported. A small quantity of ramie noils is used with wool to produce mixed effects.

Blanket on Slasher Roll.

Editor Textile World Record:

I would like some information regarding the squeeze rolls on the slasher. We are running 72 by 68 40-inch goods. We use the very best blanket. Our trouble is the blanket slipping from the cotton cloth on the roll that should hold it straight across at the end. Chopper (482).

The roll should be stripped bare and if rusty or covered with scales it should be sent to the shop and turned down smooth. Give the roll a coat of white lead and while this is still moist put on a piece of cotton cloth 1 1/2 yards long. Be sure that the cloth is straight. Let the roll stand over night to dry and harden. Place the roll in the slasher and put on the first blanket which should be a coarse fabric three yards long, and be soaked from ten minutes to half an hour and applied wet. It should be overlapped by the cotton cloth at least one turn; one and a half would be better. It may be necessary to trim the edges so they will be perfectly straight with the roll.

After this put on two fine blankets, each three yards long. Follow the directions given for the first one in regard to the laps and wetting and trimming. Do not think that one blanket five yards long will do in place of the two 3-yard blankets. As the outside fine blanket wears off it is trimmed down until used up. When putting on a new one of three yards the inner fine blanket is removed and the new one put in its place, the older one being put outside. In this way the coarse blanket will not need to be changed more than once a year.

These directions refer to the finishing roll. The other roll does not need a fine blanket. First put on the cloth, then two coarse blankets and finish with 1 1/2 yards of fine cotton cloth. This method saves the blankets. If they are properly lapped they will not slip. Thomas Barr.

English Cotton Checks.

Editor Textile World Record:

I am much interested in your September article, Textiles in Yorkshire. We manufacture fancy cotton goods and have already encountered in this market the shepherd check which you illustrate at Fig. 2, and which is sold for nine cents per 26 1/2 inch yard (English export price). We have not been able to get a sample, but the buyers are much pleased with the fabric, finish and price, which, they say, are superior to the domestic goods. Will you send me a sample of the fabric that I may see how it is made? Hoosac (481).

After the receipt of this inquiry we analyzed the English sample. Hoosac informs us that it differs from his fabric in an important particular and that an examination of the English cloth has shown him how to change his own in order to reduce the cost and improve the fabric and finish. Following are the results of our analysis of this fabric which will doubtless interest cotton manufacturers generally:

Warp, 83 threads per inch.
Black 1/36, finished count.
White 2/80, finished count.
Filling, 62 picks per inch.
Black and white, 1/103 finished count.
Weight, 10 1/2 yards 26 1/2 inches wide per pound.

The cloth has been mercerized which gives it the peculiar finish mentioned by the American buyers.

The results of this inquiry illustrate the great importance to manufacturers of an analysis of competing fabrics. The above analysis and an examination of the sample, give to a manufacturer all the information he requires to duplicate the goods, and may, as it has done in Hoosac's case, show him in what respect his own goods need to be changed in order to meet the requirements of the trade.

Sewing thread was first manufactured in 1794 by Samuel Slater, and from this country it spread to Europe where it is generally supposed to be of English origin.

KNITTING DEPARTMENT.

For Knitting Mill Machinery, Equipment and Supplies, see pages 232 to 253. Also Buyers' Index.

KNIT GOODS SITUATION.

In the main, the knit goods situation at the present time is in a satisfactory condition. The business for the latter part of October was not up to the standard, due to the warm spell at that time, but this has given way to cooler weather and a brisk demand is being felt for all lines of knit fabrics.

The conservative policy adopted by many manufacturers of running light during the past two months is bearing good results, in that no surplus of manufactured goods is being thrown on the market to demoralize matters and a reasonable parity is being maintained between the supply and the demand, and where any "shaded" price is quoted, it is usually found to apply to merchandise that has been "shaded" in the making.

Reports from the larger jobbers indicate that stocks of fleeced goods in their hands are not heavy and manufacturers have accumulated no surplus, it follows that with a period of cold weather, will come a good duplicating business.

Manufacturers with established reputations have not cut their prices on standard fleeced goods, although some of the lower grades have been cut some in price, but it is also noticed that there has been a cut in the quality, and those interested are cautioned against taking such reductions to indicate a break in price.

A number of buyers have expressed the opinion that the manufacturers of ladies' low priced ribbed goods acted unwisely in making a cut in September, as the majority of jobbers had just delivered six-pound goods to their customers, seven-pound goods were offered at the same price and at the same time. This has a tendency to prevent the placing of advance orders. The manufacturers that we have talked with state there is absolutely no profit as yet on seven-pound goods at $2.00. One result of their appearance on the market is that the jobbers are obliged to sell their six-pound goods at a reduction of 12 1/2c. from their early price.

A new invention applied to ladies' ribbed vests, corset covers and combination suits made its appearance last month in the shape of garments made with a double front and back. These are very cleverly constructed garments without seams on the shoulders and without the appearance of being clumsy or being bulky, and still answer every purpose for those who desire garments with double thickness across chest and back. They are made by the Alliance Knitting Company of Utica, N. Y., and are intended to retail at 50c. and upward. Fig. 1 shows a corset cover, Fig. 2 a vest and the manner of doubling the front. The double thickness on the back is on the inside of the garment.

Spring business among the jobbers is being booked quite rapidly despite the fact of its being the year of a presidential campaign, and the travelers we have interviewed seem to be of the impression that by the time January 1st comes around they will have their order books well filled.

An increasing business is noticeable on men's mesh goods in both cotton and linen fabrics. There has been some dissatisfaction on meshes as they were first produced, on account of their being practically non-elastic, and so shapeless that even a reasonable fit was impossible, but now there has been put on the market a new line of low priced meshes with this objection obviated. We refer to the "porous knit" goods made by the Chalmer Knitting Co. This is a line intended to retail at 50c. a garment, and manufacturers report splendid success with it.

The Linen Underwear Co. of Greenwich, N. Y., are making a line of linen goods with some elasticity to them, intended to retail at $2.50 each, which the trade are taking very kindly to.

Jobbers are complaining on account of the slow delivery of wool underwear at the present time and manufacturers of this class of goods seem to be unable to supply the needs of the trade and all report that they are very much behind on their orders and with a fair

FIG. 1.

measure of duplicating business that seems most probable during the present month, the scarcity will be more pronounced.

FIG. 2.

At this writing, manufacturers and jobbers are beginning to turn their attention to 1905 fall season's business. The raw material situation does not warrant any lower prices today than they were a year ago and some manufacturers are quoting ladies' ribbed vests on the same basis, namely, six-pound goods at $1.90 and seven-pound at $2.00. Many buyers are inclined to the belief that better prices will come about the middle of November, but it is sure that any manufacturer naming a lower price on the present raw cotton basis is simply gambling.

KNIT BLOUSE SWEATERS.

The demand for ladies' blouse sweaters has increased considerably during the last few weeks and a number of manufacturers report that they are behind on their orders. Indications are that it will be difficult for buyers to procure lines of desirable patterns. On men's and boys' sweaters the situation is quite the reverse. The demand is fully equal to the supply and no difficulty is anticipated, unless sales in the retail increase considerably.

HOSIERY.

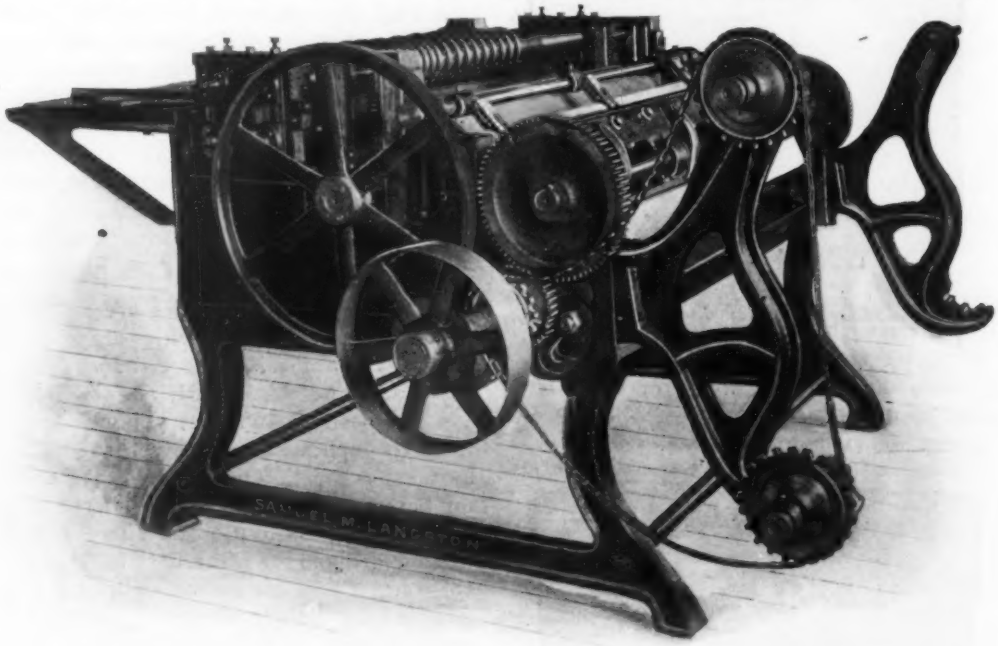
The demand for hosiery is largely confined to the staple lines. Fancies are not called for to any extent and novelties are not much sought after at the present time. Most of the retailers purchased early and the business has not been of sufficient volume to cause them to duplicate freely as yet, so that spot business is quiet. Orders for spring are being booked rapidly and most jobbers are well satisfied with the outlook. There is a noticeable demand for white hose for ladies and children. Laces are selling well, as are also tans in the lighter shades. Embroidered goods promise to be exceptionally good and the small neat patterns on the plated effects are being picked out especially.

ADVERTISING KNIT GOODS.

This month's instalment of Mr. Balmer's interesting series of articles on "Why Textile Goods should be Advertised," is devoted to the advertising of knit fabrics. Mr. Balmer's articles have more than usual interest, because apart from the arguments that are presented in a convincing manner, he presents statistical data never compiled before in relation to textile products. His articles carry the weight which always accompanies good evidence and differ materially from the frothy articles about advertising which are so frequently seen now.

THE LANGSTON CUTTER FOR KNIT GOODS.

In cutting paper, cloth, etc., into sheets or pieces from a roll, the method still in use on knit fabrics has long since been discarded for the more rapid and accurate rotary chopper. Samuel M. Langston, manufacturer of paper box machinery, 812 Winter St., Philadelphia, Pa., has necessarily had considerable experience in the manufacture of the former machines and has been able to adapt them to the work of handling knit fabrics in the same accurate and rapid manner.



THE LANGSTON CUTTER FOR KNIT GOODS.

The machine, which is shown in the accompanying illustration, will take the knit fabric as it comes from the bleacher and automatically cut it up into lengths varying from 4 to 40 inches. It has a capacity of 75 to 150 pieces a minute, according to the length. The work is cut clean and straight. Mr. Langston also makes a rotary slitter and rewinding machine for cutting knit fabrics into strips and winding them into rolls of any desired length.

PLATED KNITTING.

BY ESEK EASTON.

Plated knitting, as the word implies, is covering one thread with another. Plated goods are made with the rib stitch, the plain stitch, and the tuck stitch combined with the rib stitch. The fabric is composed of two threads which can be of different colors or of different materials.

If wool and cotton are used and it is desired to have only the wool show on the face of the fabric, the wool thread must be coarser than the cotton thread. If both threads are the same size the cotton will also show on the face.

To make the best plated knitting two sinkers or feed burrs are necessary, as for vertical stripes with plain stitch. If wool and cotton threads are used the cotton is fed into the needles with the first sinker burr and the wool with the second sinker burr. In order to have the wool thread entirely cover the cotton, the second sinker burr, which feeds

the wool thread, should be set so as to make a longer loop or stitch than that made by the first sinker burr which feeds the cotton thread.

Plated knitting can also be made with only one sinker burr by feeding the two threads with a thread guide, containing two holes. In this manner the wool thread will predominate over the cotton thread on the face of the fabric, but there will be places where the cotton thread will show through the wales on the face.

In the one and one rib stitch plated knitting is made by having two holes in the thread guide as for the plain stitch when

Fig. 1. Face

Fig. 2. Back.

using only one sinker burr. If wool and cotton threads are used the wool thread will show most on the plain stitch, and the cotton show most between the wales of the rib stitch. In the tuck stitch combined with the one and one rib stitch the cloth is made with two feeds or with a multiple of two feeds. The first feed makes the regular rib stitch and is fed with the wool thread. The second feed makes the tuck stitch on the rib stitch with the cotton thread, so that the cotton thread will show on the rib stitch at the back of the fabric. The cotton thread is on the face of the fabric at every alternate row of stitches, but as the stitch with the one and one rib stitch produces two rows of stitches on the face and one row on the back, and the tuck being also a shorter stitch, it is not shown on the face, but is covered with the stitches of the one and one rib.

Fig. 1 is an illustration of plated knitting with the plain stitch. Fig. 2 shows the back

Fig. 3. Face

Fig. 4. Back

of the same fabric. Fig. 3 shows the tuck stitch combined with the one and one rib stitch on the face; Fig. 4 is the back of the same fabric showing the rib stitches only.

Plated knitting with the plain stitch and the one and one rib is used for men's underwear. With the tuck stitch combined with one and one rib, it is used for both men's and women's goods.

MINOR DEFECTS IN KNIT CLOTH.

BY E. H. EVERETT.

The average retail purchaser of underwear of the cheaper grades understands little about the knitted part, generally being more familiar with the trimmings, and only judging the fabric in a general way. The wholesale buyers, however, are better informed as to the quality of the fabric and the knitter finds his work subjected to searching criticism by men who know when goods are right.

The chief trouble usually consists of holes in the cloth, which arise from various causes. This trouble is so common that the remedies are fairly well known and I will, therefore, deal more particularly with the minor defects occurring on circular latch needle machines, some of which often pass inspection. Carded yarn often contains thick spots, thin places, lumps of dirt, lint, badly tied knots, etc. These cause more or less press-offs and smashes, in repairing which the broken needles must be replaced. There often remain slightly damaged needles which are overlooked, causing slight imperfections, which frequently grow worse. One of these imperfections is a wide wale which shows most conspicuously where the cloth is stretched out before it reaches the take-up rolls. The power for operating the dial needles is transmitted by means of lugs from the cylinder to the dial through the cloth. These lugs frequently leave slight marks on the cloth. This is an unavoidable evil with which every operator quickly becomes familiar.

An irregular wale elsewhere is a different matter, and should be remedied. Often the cause if found to be a cylinder needle which is bent a little to one side below the rivet. If the bend is below the slot for the latch, it can easily be straightened with a pair of pliers, but if the bend injures the slot at all, the safest way is to throw the needle out. If the cylinder needles do not seem to be at fault, examine the next dial needle. The hook may be bent slightly higher than the rest and can often be straightened, or if it is bound to be straight when removed, there may be a bit of lint or dirt in the slot.

In mills where dial needles of the same gauge, but with hooks of different sizes are used, it may happen that a needle with a large hook has been used instead of one with a small hook. If none of these causes exist, turn back to the cylinder needles, and remove four or five at the point where the trouble seems to be and examine the stems and shanks. Very likely one may be bent, preventing the needle from sliding freely in the slot.

Another imperfection is generally called "bird-eye." These may run vertically or horizontally or both ways as in Fig. 1. Bird-eyes which follow a wale are often caused by a dial needle which either has the hook opened a little too much or the latch bent a little to one side. In either case the needle does not cast the stitch off properly every time. If the bird-eyes follow the feed horizontally around the cloth, it generally indicates that one of the dial cams is out of order. If a draw cam is set too lightly or a tucking cam doesn't throw the needles out far enough, a proper adjustment of the misplaced cam will quickly end the trouble.

FIG. 1.

When the bird-eyes appear to follow the marks of the cylinder lugs it is an indication that the take-up is not working properly. By watching the machine for a few minutes one can generally see if this is the case. With machines which use a weight take-up the belt may have become stretched a little, or the accumulated cloth may interfere with the

action of the rolls. Of course one of the lugs may need adjustment, but this seldom occurs, as these parts are pretty sure to stay where they are put, and yet in many cases they are blamed for trouble that arises from other sources.

When bird-eyes are scattered all over the cloth it is pretty certain that the dial cams are at fault. Some of the stitch changing mechanism may have become displaced,

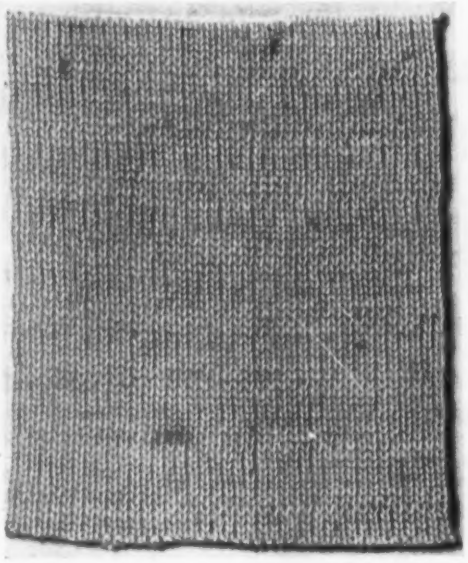


FIG. 2.

throwing the tucking cams in just far enough to make occasional bad stitches, or it may be that the yarn on the machine has been changed from a fine to a coarser number, in which case the dial draw cams should be changed if there is much difference between the two sizes of yarn.

Another somewhat similar trouble is caused by a cylinder needle latch being slightly bent or broken, preventing the stitch from casting off properly. This may occur in all degrees, frequently getting worse very rapidly to the extent of cutting holes or even tearing a slit in the cloth, unless promptly repaired.

Some time when examining the cloth, the light strikes it so as to show a wale made by a cylinder needle, causing a noticeably fuzzy appearance. This is caused by a loose rivet in the needle. The ends of the rivet catch the yarn just enough to roughen it a little. The defect often is not noticed and generally does little damage at first, but gradually gets worse till holes are cut, sometimes several feet apart at first, and the novice is unable to find any cause for them. The only safe way is to remove such needles as soon as detected, and break them to prevent any chance of using them again by mistake.

A very annoying defect is shown in Fig. 2. The stripes or unevenness is liable to arise from more than one cause. The first idea may be that the yarn is not evenly spun, and this may or may not be the case. To test the matter, remove all the yarn from the machine and replace with cones or bobbins of yarn which are known to be all right. If the cloth comes down smooth and even we have good grounds for finding fault with the spinner. If the trouble continues, the machine must be at fault and the next thing to do is to "even up the ends." A slight mark is made with colored crayon or soiled fingers on each end of yarn opposite some uniform part of the stop-motion and then slowly turning the machine till these marks come opposite some other part of the stop-motion as near the feeders as possible. If the marks keep close together the cylinder draw cams are set uniformly. If some of the marks gain on the others the corresponding cam should be raised till all draw alike. In case the trouble does not lie with the cylinder draw-cams, the dial draw cams may be uneven, and about the only course is to examine the stitches as they are cast off by the dial needles and see that all the cams draw the same. There is no satisfactory proof of this except that given by the appearance of the cloth.

When knitting two or more numbers of yarn nearly alike, machine tenders are apt to get the numbers misplaced and thus produces uneven cloth. When the numbers or quality differ considerably the mistake is apparent.

In all the cases mentioned, reference has been made to plain (one and one) stitch cloth, as it is generally understood that any defect is more or less covered by tuck stitches, hence the old knitting rule: "Get the plain stitch right and the tuck will give no

trouble." The writer realizes that not all or nearly all defective points have been touched upon, for knitting machines, like men, seem to have an endless tendency to go wrong, but careful attention to the defects mentioned will enable one to avoid most of the obstacles in the way of perfect cloth.

THE GORMLY SPRING NEEDLE KNITTER.

Mess. Robert W. Gormly & Co., of Troy, N. Y., are well known builders of spring needle knitting machinery, and having had a practical experience of thirty years in the business are enabled to offer a guarantee of workmanship of the highest quality. Fig. 1 represents the Gormly spring needle knitter, which is producing results of a most satisfactory nature. All parts of this machine are interchangeable with machines of this design now in use. This machine is equipped with a number of recent improvements, and one of the specialties that this company directs particular attention to is their new patent burr wheel support, as shown at Fig. 2. The makers claim for it that it is the cheapest and best on the market, with more and simpler adjustment than any other make. Among the claims made for this machine are the following:

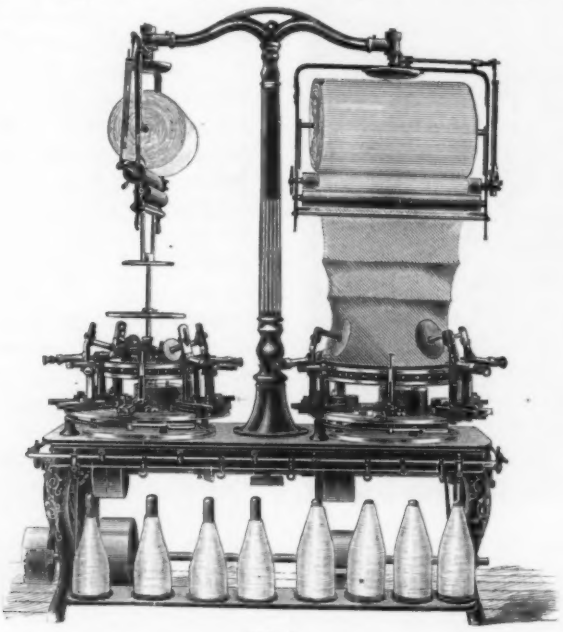


FIG. 1.

In a bur-wheel support for knitting-machines the combination with a barrel; of a bur-wheel-supporting spindle capable of reciprocating slide movements through said barrel; means whereby the spindle is at certain times held against rotary movements within the barrel; and a spindle-actuating coil-spring secured against rotary movement within the barrel and having a screw connection with said spindle whereby the tension of said spring can be varied by rotary movement of the spindle.

In a bur-wheel support for knitting-machines, the combination with a barrel having spindle-bearings at its opposite ends and an enlarged chamber intermediately thereof, and provided with a longitudinal slideway opening into said chamber and offset from and opening into the bearing at the inner end of the barrel; of a bur-wheel-supporting spindle extending through the barrel and capable of reciprocating slide movements in said bearings, said spindle having an offset fitting said offset slideway in the inner end of the barrel and withdrawable into said chamber; and a

spindle-actuating coil-spring secured against rotary movement within the barrel and having a screw connection with said spindle, whereby the tension of said spring can be varied by rotary movement of the spindle when its offset is withdrawn into said chamber.

In a bur-wheel support for knitting-machines, the combination with a supporting plate provided with a cylindrical aperture of a barrel having a cylindrical inner end rotatively mounted in said aperture in the

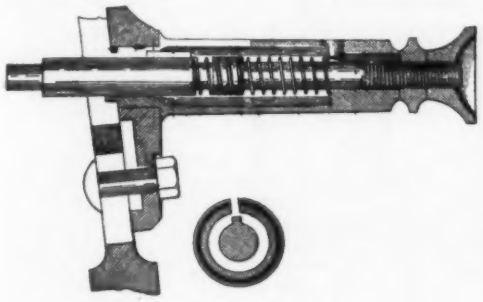


FIG. 2.

supporting-plate; said barrel being provided with spindle-bearings at its opposite ends, and intermediately thereof with a chamber; a bur-wheel-supporting spindle extending through said barrel, fitting and capable of longitudinal sliding movements in the bearings at the opposite ends of the barrel; a spindle-actuating spring located in the chamber in said barrel; a stop to limit the spring-induced action of the spindle, means whereby the spindle is held from rotative movement in the barrel; and means for locking the barrel in selected positions of rotative adjustment in the aperture in said plate.

In a bur-wheel support for knitting machines and in combination, a barrel; a bur-wheel-supporting spindle capable of endwise movements through the barrel; a spindle-actuating spring interposed between an abutment on the outer end of the barrel and an abutment on said spindle and having a screw connection with one of said abutments, whereby the tension of said spring can be varied by a relative rotary movement between the spring and the abutment with which it has screw connection.

In a bur-wheel support for knitting machines, the combination with a supporting-plate provided with a cylindrical aperture; of a barrel having a cylindrical inner end rotatively mounted in said aperture in the supporting-plate said barrel being provided at its outer end with a spindle-bearing, and in an integral portion thereof at its inner end with a spindle-bearing and a longitudinal slideway offset from and opening into said bearing; a bur-wheel-supporting spindle extended through said barrel, fitting and capable of longitudinal sliding movements in the bearings at the opposite ends of the barrel; said spindle having an offset fitting said offset slideway in the inner end of the barrel whereby the spindle is held from rotative movement in the barrel, and means for locking the barrel in selected positions of rotative adjustment in the aperture in said plate.

The machines made by this company cover a wide range, and include flat work, mesh work, fleece, astrachan, fine gauge, balbriggan, and linings.

A FABRIC CUTTER FOR KNITTING MACHINES.

A device for slitting knit fabrics on the knitting machines has recently been patented in this country.

Knitted fabrics are now commonly slitted longitudinally by hand in cutting them for use, one needle being frequently omitted for the purpose of forming a weakened portion to guide the operator in cutting. This is especially important in cutting up tubular fabric for use in the manufacture of undergarments. The cutting, however, is dependent upon the skill of the operator and more or less waste and injury to the fabric has been occasioned by the deviations of the line of cut from the correct line.

Fig. 1 is a rear elevation of so much of the new device as is necessary for an explanation of its operation. Fig. 2 is a sectional side elevation showing the co-operative relation of the tube-distender, cutter, and take-up rolls.

The knitting machine shown in the illustration comprises a frame carrying a plate which supports the working parts, being in

this case the usual needles and needle-cams and their operating mechanisms.

The machine is provided with the usual pattern-controlling mechanism. To this machine has been applied a rotary cutter, 19, secured upon a shaft and mounted in suitable bearings. The cutter engages the tube of fabric between the knitting means and the take-up, being positioned to engage the middle of one side of the flat tube as said tube approaches the take-up rolls. The tube is by the knife and which are secured to the take-up frame.

The tube passes down past the porcupine roller and the co-operating guide-roller and is then opened or distended by the tube-distender and slitted or cut longitudinally along the weakened portion, i. e., along the line indicated by the omission of the needle from the needle-cylinder and thence between the take-up rolls which discharge it from the machine.

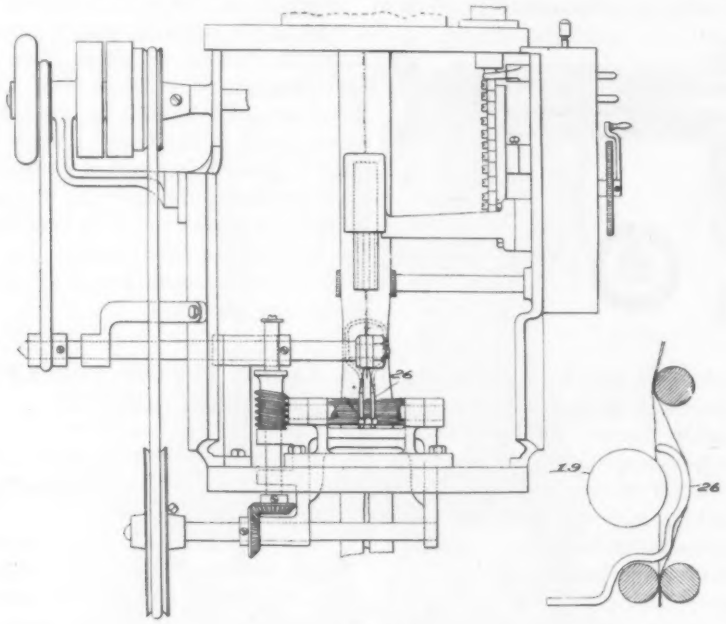


FIG. 1.

preferably weakened along the longitudinal line, which is engaged by the cutter, by the omission of a needle from the needle-cylinder. The cutter lying in the path of movement of the fabric is constantly in engagement with it, and as the fabric passes it is divided along a longitudinal line.

The cutter, as described, can sever the fabric into two strips; but it is preferred to employ a tube-distender, 26, which is located in the tube in such position as to distend the side thereof opposite the cutter and hold it out of engagement therewith. The tube-distender is provided with a shank consisting of two pieces of wire which pass downward from the distender out through the slit made

Number of Needles for Half Hose.

Editor Textile World Record:

Please let me know what is the usual number of needles in knitting machines and number of cotton yarns used in making men's half hose and ladies' stockings, which retail at two pairs for 25 cents and 15 cents per pair?

Needle Point (479).

The following list shows the ordinary range of yarn counts and needles for ladies' stockings of the quality named:

1/10s and 1/12s cotton yarn	152 needles
1/12s-1/13s or 1/14s	176 needles
1/14s and 1/16s	184 needles
1/18s and 1/20s	200 needles

The different sizes of yarns used would give different weights per dozen.

For half hose:

1/5s or 1/6s cotton .....128 needles
1/8s or 1/10s cotton .....148 needles
1/12s to 1/14s .....176 needles
1/18s or 1/20s .....200 needles

Lafayette.

Lisle Finish on Hosiery.

Editor Textile World Record:

Please give us some information on the process of putting the lisle finish on hosiery dyed with the sulphur colors. Seamless (485).

An article on this subject will be found in the dyeing department in this issue.

Knitting Machine Patent Decision.

In the case of James L. Eck of the Boss Knitting Machine Co. against Sylvester J. Kutz, both of Reading, Pa., Judge Archbald rendered a decision at Scranton on September 22, finding that the defendant has infringed on three patents of the plaintiff, which are improvements on certain knitting machinery. This was the case in which the judge instructed that the machines should be set up in court and he proceeded to knit socks himself. The court has ordered the appointment of a master to assess damages.

Alleged Patent Infringement.

Suit has been instituted in the United States Circuit Court for the northern district of New York by Messrs. Scott & Williams of Philadelphia and Joseph W. North of Elizabeth, N. J., against the Kendall Knitting Company and others of Utica for alleged infringement of the patent granted to David C. Bellis of Elizabeth, N. J., June 9, 1896, for certain improvements in machines for making fleece-lined ribbed underwear. The complainants claim that this is a pioneer patent. This case is considered a most important one, and its decision will be awaited with interest, as similar suits have been instituted against other concerns who are using alleged infringing machines.

The Mayo Knitting Machine.

The Geo. D. Mayo Machine Co., who are manufacturing the new Mayo knitting machine at Casino Square, Laconia, N. H., are hustling to keep up with the demand for the new machine, and will try to get along without running their shop nights, by adding new machinery and employing more machinists. With this end in view, they have just ordered several thousand dollars' worth of new lathes and other machines and are taking on skilled workmen as fast as they can be obtained.

At the present time they have over seventy men on their pay roll, and are producing about twenty completed machines each week. A whole carload of machines, the complete equipment for a Southern hosiery mill, was shipped last week, and another carload, the entire equipment of another mill, will be ready for shipment in a few days.

The new Mayo knitting machines are giving excellent satisfaction in all parts of the country and hosiery men who had a few of them have come back for more.

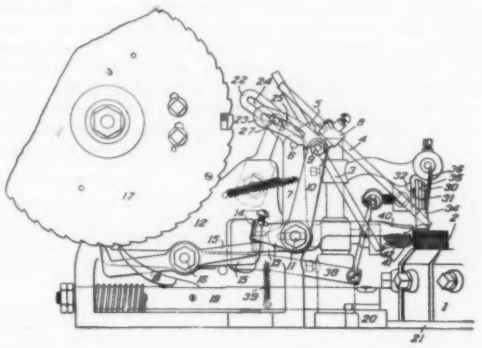
Recent Knitting Patents.

KNIT FABRIC. 772,478. Ephraim Rogers and Charles J. Schuyler, Philadelphia, Pa.

KNITTED FABRIC. Machine for unraveling. 772,458. Henry Curtis, Kenosha, Wis.

KNITTING MACHINE. 770,942. Daniel F. Sullivan, Lowell, Mass., assignor to Lawrence Mfg. Co., Lowell, Mass.

The present invention relates to an improvement in knitting-machines, and more particularly to striping attachments for circular barbed or spring needle knitting-machines.



The needle-cylinder 1 is mounted in the usual manner on the bed-plate of the knitting-machine and carries the usual barbed or spring needles 2. The yarn is guided to the needles by yarn-tubes 3 and 4, of which the yarn-tube 3 is shown in the position which it occupies when delivering thread to the looper-wheel to be knit into the fabric. The yarn-tube 3 is carried by a tube-carrying lever 5, pivoted at 6 upon the intermediate lever 7. The yarn-tube 4 is carried in similar manner by the lever 8, pivotally supported at 9 upon the intermediate lever 10. The two levers 7 and 10 are pivotally mounted upon the stud 11, secured to a portion of the frame 12 of the attachment, which in turn is mounted upon the bed-plate of the machine. The rearwardly-extended arms 13 of the intermediate levers 7 and 10 are provided with adjusting screws 14, the lower ends of which are adapted to bear upon the forward ends of the cam-levers 15, pivotally mounted at 16 on the frame 12 of the attachment. The rearwardly-extended arms of the cam-levers 15 are provided with portions adapted to be engaged by pins upon pattern-wheels 17, actuated through the medium of the pawl 18, carried by the reciprocating slide-bar 19, which is mounted in suitable bearings in the frame of the device and which carries upon its forward end a cam-roll 20, engaging the cam 21, secured to the needle-cylinder 1.

KNITTING MILL NEWS.

New Mills.

*Alabama, Gadsden. The new knitting mill to be started here by R. L. Adams will be known as the Adams Knitting Mill and will be put in operation about November 1st. Ladies' undervests will be made. Plant will be equipped with 10 knitting and 7 sewing machines. Bateson & Dowd, New York, will sell the goods. About 20 people will be employed.

*Illinois, Menard. Operations will be started October 25th in the Southern Illinois Penitentiary Knitting Shop, which will manufacture men's, women's and children's hosiery to supply the State and county institutions of Illinois. Jas. B. Smith, warden, will attend to the buying. R. L. Enscore is superintendent of the plant. They will operate 40 machines.

*Mississippi, Columbus. The Columbus Underwear Company, which has begun work on erection of new mill, contemplates having same in operation by December, 1904. Company has capital stock of $100,000; F. W. Kavanaugh is president; E. E. Hopkins, treasurer, and John McGinnis agent and superintendent. They will make cotton and wool fleece lined underwear, for men and children. Will equip plant with 6 sets cards, 1,440 cotton spindles, 45 knitting and 100 sewing machines.

*New York, Kinderhook. Operations were started October 1st in the Elk Manufacturing Co.'s new plant. The firm comprises W. A. Ferguson and W. P. Johnson. They manufacture gloves, mittens and knitted novelties, operating six Lamb machines.

*New York, New York. The new plant for the Ringheim-Schlichten Ramie Mfg. Co., Inc., will be located at Brooklyn. A building, having floor space of 25,000 square feet, will be leased for the purpose. They expect to have the mill in operation early in 1905, making men's, women's and children's knit underwear, hosiery, etc., of ramie. Will have an equipment of about 50 knitting and 200 sewing machines. Company's New York office is at 473 Broome St.

New York, Troy. Operations will be started next week in the plant formerly operated by the Commercial Knitting Company, by Gates Barnet, manufacturing stockinet.

North Carolina, High Point. The High Point Hosiery Mills have been incorporated with capital stock of $25,000, with J. H. Adams, secretary, treasurer and manager. Work has been started on erection of new building in which 100 machines will be installed, to manufacture misses' ribbed hosiery. The main building will be 100 by 60 feet, two stories, with an addition 30 by 40 feet. A dye house will also be attached.

*North Carolina, Hillsboro. The Belle-Vue Manufacturing Co. will start work Nov. 1st on erection of their new mill, which they propose having in operation Jan. 1st, making children's and misses' stockings. S. Stendwitch is president of the concern and T. N. Webb, treasurer. A dye house will be installed in the mill. They have not yet made any contracts.

Enlargements and Improvements.

Michigan, Clare. William Wolsey, manufacturer of heavy wool socks and mittens, has purchased a building formerly used as a public hall, and after making alterations will remove knitting plant into same.

Michigan, Lansing. A one-story storehouse, 36 by 70 feet, is being built for the Michigan Knitting Company.

New York, Richfield Springs. A new building, 120 by 50 feet, three stories, is to be built for the Waiontha Knitting Co., for purpose of doubling capacity of present plant. They will also erect a new three-story office building. Electricity will be installed for power.

*New York, Cohoes. The Riverside Knitting Mill property was sold at auction recently to the National Bank. The plant has been leased by the Fuld & Hatch Knitting Co., for five years, with privilege of purchasing same at expiration of lease. They will start operations at once.

New York, Nichols. Additional machinery is to be installed in the Nichols Knitting Mill.

*New York, Richfield Springs. The Waiontha Knitting Co. expects to have their new building, upon which construction work has begun, completed about Jan. 1st.

*North Carolina, Scotland Neck. Work has begun on erection of an additional building, 130 by 40 feet, two stories, for the Scotland Neck Cotton Mills. The new building will be utilized for offices, cloak-room and other purposes, also some new machinery.

Ontario, Hamilton. A large addition is to be built to the Chipman-Holton Knitting Co.'s mill.

Pennsylvania, Clifton Heights. Ten additional knitting machines will be installed in the Columbus Knitting Mills. This plant is operated on women's hosiery.

Pennsylvania, Columbia. The Gem Knitting Mills have been purchased by A. R. Kreider & Bro., of Annville.

*Pennsylvania, Hazleton. The underwear factory of Wild & Co. has been removed to their new building, 66 by 110 feet, two stories and basement, of brick, with engine house adjacent from the main building, all of slow burning construction. The company states that they have been very busy-being compelled, for seven months during the year, to run day and night to fill their orders. They manufacture ladies' Swiss ribbed goods on 48 knitters and 35 sewing machines, bleaching their own goods, which are sold direct from offices in New York and Boston. Mr. Chas. L. Wild is the managing director.

Mills Starting Up.

Mississippi, Columbus. The Columbus Hosiery Mills, which have been closed for several weeks for purpose of making repairs and installing new machinery, have resumed operations.

Rhode Island, Woonsocket. The Glenark Knitting Company, which has been running but five days a week since last April, has started operations on full time.

Mills Shutting Down.

New York, Rochester. Owing to scarcity of help, the Ideal Knitting Works have been shut down. It is stated that the plant will be removed to another city where more suitable quarters can be obtained. They operate 32 machines on seamless half hose and in the event of their removal the establishment will be enlarged to permit manufacturing infants' goods.

Pennsylvania, Nanticoke. The knitting factory run by Paul Barrall under the name of the Nanticoke Knitting Mill, with 17 knitters on 216 needle hose, is no longer in existence, Mr. Barrall having disposed of the plant.

Pennsylvania, Plymouth. Templeton Bros., Shawnee Knitting Mills, is closed down. The proprietors are undecided whether to start it up again or not. The factory contained 29 knitters which were run on seamless half hose with a capacity of 100 dozen per day.

Pennsylvania, Scranton. Operations have been discontinued permanently in the Menzies Knitting Co.'s plant.

Pennsylvania, Scranton. The Summit Knitting Company, manufacturing ladies' blouses, men's and boys' sweaters, silk underwear, mitts and gloves, has been obliged to close the plant, owing to scarcity of help.

Washington, Tacoma. Ward H. Cramer has discontinued the Puget Sound Knitting Mills.

Facts and Gossip.

Delaware, Wilmington. The Delaware Hosiery Manufacturing Company has been incorporated with capital stock of $100,000.

*Indiana, Elkhart. The entire plant of the Lakeside Knitting Company (Michigan City) has been removed here.

Maine, Brunswick. Elmer Cobb is reported as making preparations to start a stocking factory here, with one or two machines, eventually increasing the number.

Maryland, Hagerstown. The Hancock Manufacturing Co. is reported to start work soon manufacturing a fine line of hosiery.

New Jersey, Plainfield. It is reported that a knitting concern at Fonda, N. Y., contemplates removing here and will do so provided $15,000 worth of stock is taken locally.

New York, Little Falls. It is reported that Messrs. Senior and Stinson will use part of the Titus Sheard Mills for manufacturing sweaters.

Pennsylvania, Allentown. J. J. Taylor & Co.'s Swissonia Knitting Mill is very busy operating on women's ribbed vests of a very fine quality. This mill was formerly run by the Clinton Knitting Co., Taylor & Co. taking hold of it about a year ago, when they entirely re-equipped the establishment with new machinery, enabling them to turn out goods of highest quality. Product is sold through New York houses.

Pennsylvania, Myerstown. It is reported that Geo. A. Martin & Son have formed a partnership and will start plant for manufacturing hosiery in building formerly occupied by John Millichsack.

*Pennsylvania, Philadelphia. Barger & Bains, operating plant for manufacturing infants' high grade hosiery, southeast corner Turner and Mascher Streets, have an equipment of 34 knitting machines and are adding to the number as business requires.

Pennsylvania, Scranton. The Scranton Knitting Co., D. Harris & Co., owners, which began operations last May, is very busy on blouses, cardigan jackets, boys' and juvenile men's high grade sweaters. Plant is equipped with 12 machines, and operated by steam. David Knopfel is superintendent of the plant and Chas. Riceman, buyer. The goods are sold direct.

Pennsylvania, Slatington. Both the knitting mills here are very busy and have been so during the past season. They are running full time and report a ready sale for their product.

Pennsylvania, South Bethlehem. The branch factory of C. and J. Gould, Philadelphia, Pa., is running full time on worsted and cotton half hose on 40 knitters, which are run by electricity. O. J. Mooney is in charge of the plant. The main factory in Philadelphia has recently been removed to Kensington Ave. and Huntingdon St. where they are doing a good business.

Wisconsin, Marinette. A knitting mill is to be started here.

Wisconsin, Neenah. The Neenah Knitting Company has been incorporated with capital stock of $25,000 by H. K. Babcock, C. H. Kramer and William C. Wing.

Personals.

John McNamara is now employed by the Swandown Knitting Co., Hudson, N. Y., as overseer of carding.

William E. Underwood, Hamilton, Ont., has accepted the position of finisher with the Brantford Hosiery Co., Brantford, Canada.

Mr. David Kornfel has severed his connection with the Summit Knitting Co. (Scranton, Pa.), recently closed down, and accepted a position with the Scranton Knitting Co.

John A. Lutton has recently secured the position of overseer of carding with the Harder branch of the Union Mills, Hudson, N. Y.

B. L. Brown has resigned from his position with Radcliffe Bros., Shelton, Conn., and accepted a position as foreman with the Columbia Hosiery Co., New York City.

W. A. Toomey, of Bennington, Vt., has been appointed superintendent of the American Knit Goods Manufacturing Company, Brooklyn, N. Y.

Frank Hervey has been appointed to take the place of William A. Toomey in the machine department of H. E. Bradford & Co.'s mill in Bennington, Vt.

William A. Toomey, for the last three years with H. E. Bradford & Co., has accepted a position with the American Knit Goods Company, Brooklyn, N. Y., as superintendent of machines and machinery.

New Machinery and Processes.

This department is designed to present from month to month a brief mention of new machinery, devices, and processes being brought out in this country and abroad, that are of interest to textile manufacturers. It is not a list of patents, but of improvements coming on the market. The idea being to present to our readers a systematic monthly record of new machinery, etc., of interest to textile mill men.
We invite machine builders and others to send us such information for this department.

Sizing Compounds. The Arabol Mfg. Co., 100 William St., New York, is placing on the market the Arabol size blender and international prize starch, to which attention is called in another part of this issue.

Wool Scouring Machine. F. L. Whitney, 70 Kilby St., Boston, is introducing to the eastern manufacturers his wool scouring machine which has been in use in California for the last two years.

Cutter for Knit Goods. Samuel M. Langston, Philadelphia, Pa., has recently brought out an improved cutter for knit goods which is described and illustrated in another part of this issue.

Automatic Cloth Finishing Machine. Frank Stiner, Lawrence, Mass., is introducing to the textile trade a machine for extracting and dampening cloth in the open width. A description is given in another part of this issue.

New Seaming Machine. The Arnold Sewing Machine Co., 216 High St., Newark, N. J., is putting on the market a new seaming machine. This has been especially designed for the high maintained speed of 4,000 stitches per minute, and it is claimed to be capable of running at the rate of 5,000 stitches per minute if desired. The standard of workmanship for a machine of this capacity must necessarily be of a high mechanical order.

Guards for Mules. Joseph Bowker, Hollinwood, Lancashire, is placing on the market a faller stop guard and a carriage wheel guard for mules. It is claimed that both are very efficient, and make impossible the accidents they are designed to prevent.

Yarn Doubler. Carl Hamel, Chemnitz, is placing on the market an improved yarn doubling machine provided with a new stop motion.

Leno Motion. Whitehead and Woods, Preston, England, have recently placed on the market a new leno motion.

Separator for Ring Frames. J. Sax, Mulhouse, Germany, has recently brought out an improved separator for preventing the ballooning of thread on ring frames.

Jacquard Card Stitching Machine. A. E. Sander, Chemnitz, Germany. A machine for stitching jacquard cards, which is said to occupy very little room. It is suited for any size of card and can be quickly adjusted for different stitches and driven by foot or electric power.

Silk Warping Machine. Gerhard Herbst, Krefeld, has recently brought out a new warping machine for warping yarn direct from the bobbin to the loom beam without intermediate spooling or winding. It is adapted for all widths between 40 and 80 inches.

Strength Tester for Yarn. Cook & Co., Manchester, England, are placing on the market a yarn tester that will test the strength of each thread separately and record in diagrammatic form the breaking strength in ounces. The machine will test a number of cops simultaneously.

Cotton Filling Frame. The Paley Brake Ring Co., Manchester, England, is introducing a double ring for cotton spinning frames. The outer ring acts as a brake to the traveler when the yarn is being wound at the larger part of the bobbin. It is claimed that frames with the new ring will do work that heretofore has been possible only on the mule. The Paley ring is on exhibition at Manchester, running on different makes of mules. It is said that one frame is producing 25 hanks of 95s yarn in 53 hours from 17 1/2 double hank roving, putting 34 turns of twist in the yarn.

A NEW WARP STOP MOTION.

The cotton industry is at present undergoing a process of readjustment, made necessary by a combination of circumstances. The increase in the cost of the raw material, which has accompanied the very desirable restoration of cotton prices to an American level, and the absence of a compensating advance in goods have caused heavy losses to cotton manufacturers in every part of the world, and there is a reasonable certainty that the price of cotton will remain near its present level. Furthermore, the awakening of the industrial South

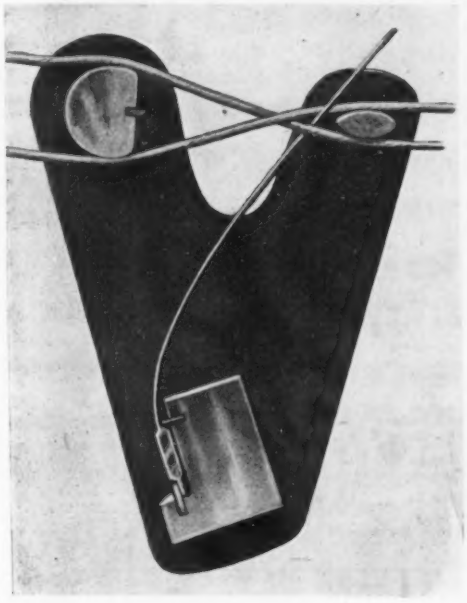


FIG. 1.

has brought the older manufacturing sections into competition with products of a lower labor cost. Thus a number of influences, some permanent, others likely to be temporary, compel cotton manufacturers to readjust their business to new conditions. This combination of circumstances is forcing manufacturers to adopt labor saving devices as a means of self preservation. All departments of the mill are subject to the effort to reduce cost, but it is natural that the chief exertions should center in the process of weaving, of which the cost is one-half the total cost of manufacturing on medium goods. Automatic looms, long bobbins and the warp stop-motion are the chief means with which the new conditions are to be met and cotton manufacturing kept on a sound basis.

A new warp stop-motion, which is in successful operation in English and Continental

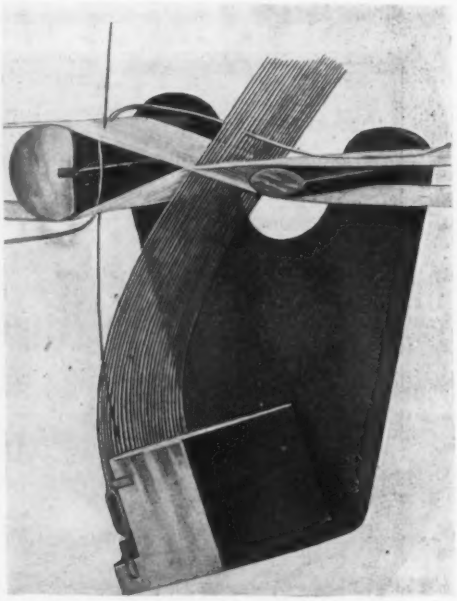


FIG. 2.

mills, is now being introduced into this country and promises to be an important factor in the solution of the problems we have just referred to. It is already in operation in a number of our leading mills, among which are the mills of the Fall River Iron Works Co., which, as is well known, have continued in operation despite the strike in that city. The new stop-motion is so simple that it can be described in a few words. A lease is taken in the warp, and between every two threads a straight steel wire is engaged, as shown at Fig. 1, in such a way that it cannot pass to the large rod with the metal slip so long as the two threads are unbroken. If, however, either of these threads break, the wire springs back again against the metal slip in the large rod, closes an electric circuit

carrying a weak current like that used for the telephone, operates a simple mechanism connected with the belt shipper, and stops the loom.

The wires are set in combs, usually about an inch long, and placed in the lower comb clamp, Fig. 2. These inch segments accommodate setts up to any number within the requirements of weaving practice. For fine goods a shorter segment is used so as to provide for change of sley within the limits necessary. The tension of the wires on the lease is regulated by the angle at which the comb clamp is held relative to the contact rod. This bar can be adjusted by changing the position of the hole in the end plate, by which the three rods are held in proper relative position.

The stop-motion occupies no more space than an ordinary lease because the stopping device is contained between the two lease rods. The warp can be drawn into the combs, either by hand or by a drawing-in machine, before it comes to the loom, or the combs can be placed in position after the warp is hung in the loom. By the kind permission of Samuel E. Hathaway, superintendent, we are able to illustrate a loom equipped with this stop-motion in the mills of the Fall River Iron Works Co. Fig. 3 shows the comb in position between the rods; the complete detecting device being simply suspended on the warp, no fixture whatever to the loom side being necessary.

All that is necessary to hold the rods in position in the warp is the ordinary pair of leather straps, connecting them to the back rail, not shown, for clearness, in the illustration. A pair of flexible wires passed under screws at the ends of the contact rod and comb clamp convey the small current.

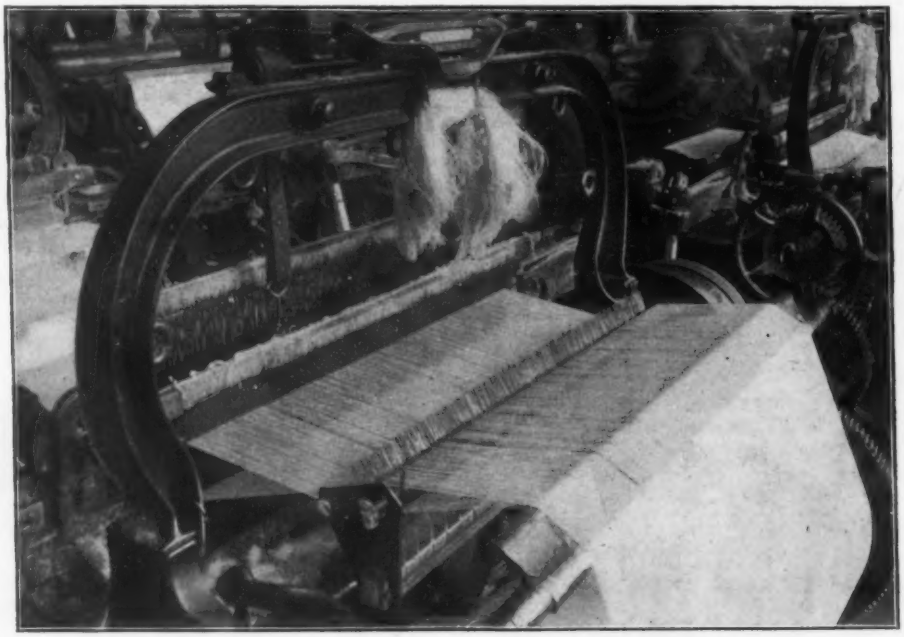


FIG 3. A NEW WARP STOP MOTION.

Fig. 4 shows the box containing the shipping mechanism on the same loom. This shipper is constructed so as to be positive in action with a current of very low power. This result is accomplished by using the moving part of the loom to transfer the belt, while the current simply makes the connection between a vibrating rod and the shipper. The current to operate the motion can be

obtained from a dry cell, but in practice it is usually obtained from a small dynamo.

The simplicity of this stop-motion is evident from the foregoing description. Its efficiency is equally evident from its practical operation. In addition to the Fall River Iron Works, it is in use in the mills of the Pierce Manufacturing Corporation, New Bedford, Mass., and of the Paul Whitin Manufacturing Co., Northbridge, Mass. It is also being installed in several other leading mills. The following letters from British manufacturers of fine goods show the success it has attained abroad:

A. P. Bird & Co., Glasgow, Scotland.
September 20, 1904.

Dear Sirs:

In reply to your inquiry regarding the working of the warp stop-motion supplied by you now in use in John Street Weaving Factory, I am pleased to report that this is giving every satisfaction. I consider the action of the stop exceedingly simple, and the worker becomes very quickly acquainted with its use, while the improvement in the quality of the cloth is all that could be desired.

Yours truly,

A. P. Bird, Jr.

Gentlemen:—

We are pleased to report that the 31 stops you have fitted up in our place are giving every satisfaction. They are doing away with the bulk of our darning, and in themselves give practically no trouble.

David Ligat & Son.

This stop-motion is manufactured by Textile Appliances Limited, 68 West Exchange St., Providence, R. I. A loom equipped with the motion is in operation at the Providence office, which is but a few minutes' walk from the depot. Dr. Thomas A. B. Carver, a Director of the Company, who has charge of the introductory work, will be pleased to show the stop-motion in operation to all interested in cotton manufacturing who may make an appointment to call.

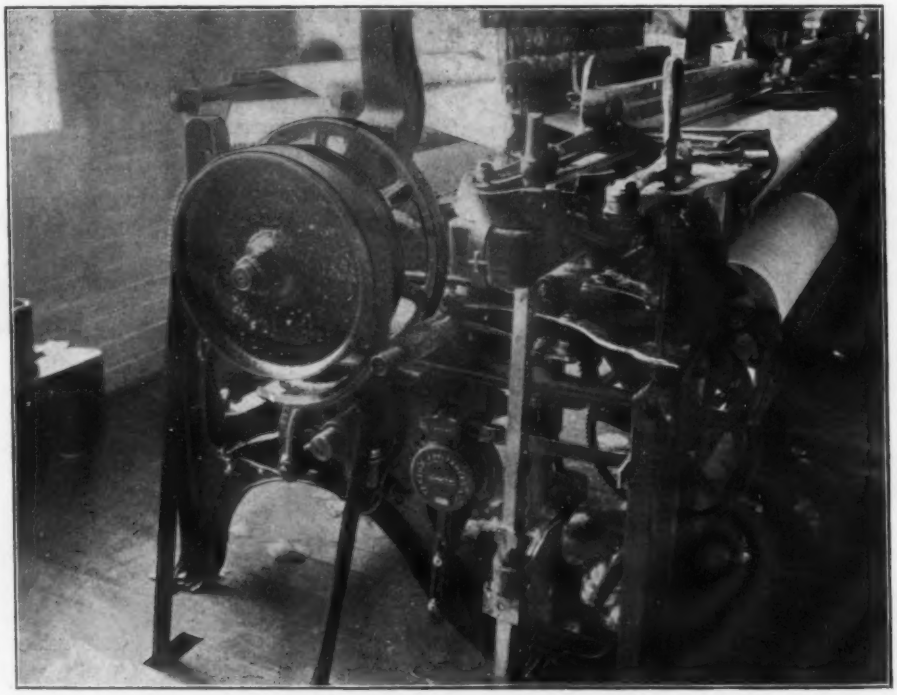
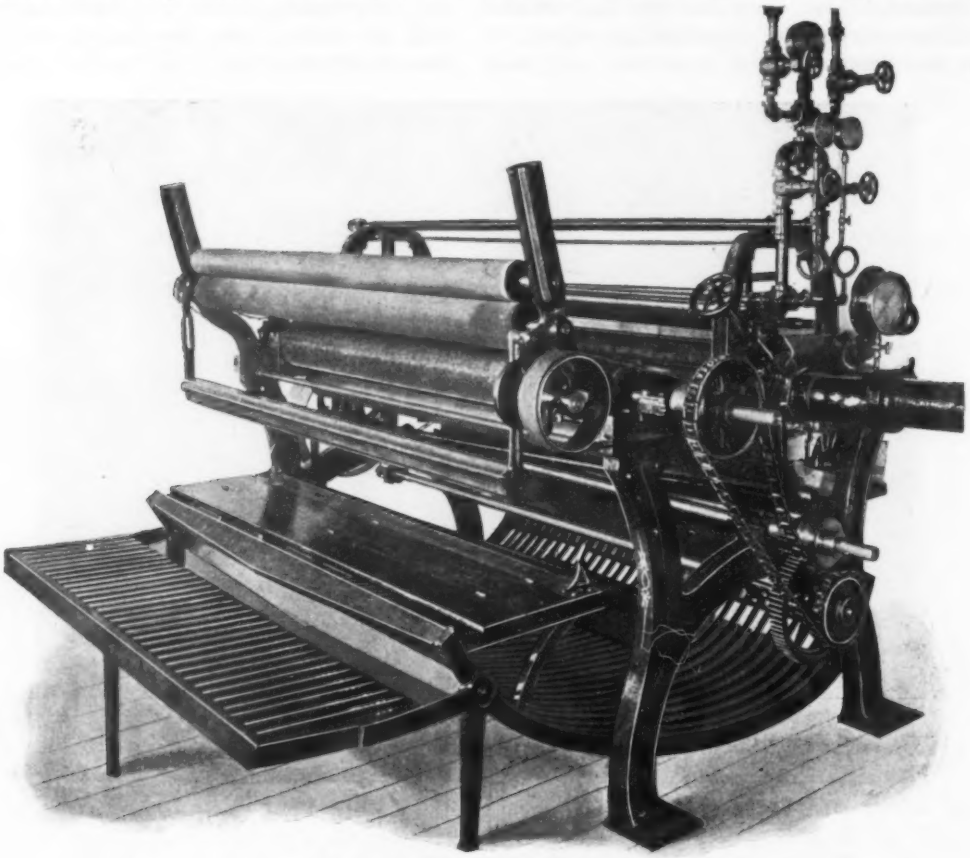


FIG. 4.

Jacquard Machine. Oskar Schleicher, in Greiz, Germany, has recently placed on the market an improved jacquard machine which is claimed to run very smoothly at a high speed.

THE STINER CLOTH EXTRACTOR AND DAMPENING MACHINE.

The ordinary method of extracting water from textile goods with the centrifugal extractor is open to serious objections. The goods are wrinkled in the process, which is laborious and expensive. Moreover, the high speed and great weight of the machines often result in serious accidents. The centrifugal process also requires a large amount of power. Generally one piece of heavy weight cloth is extracted at a time, occasionally two. Taking a 40-yard piece of heavy weight goods, for illustration, we find the piece before extracting weighs 180 pounds; after extracting, 90 pounds; when dry, 60 pounds. In other words, the extractor, at a great expenditure of time and power, merely removes 11 gallons of water from the piece, while leaving nearly four gallons behind to be evaporated at much expense on a cloth dryer. Some kinds of goods can be extracted by squeezing between rolls, but the use of this method is very limited, as it is liable to cause wrinkles in many kinds of goods, particularly in woolens and worsteds. Generally extracting between squeeze rolls leaves more water in the goods than does the centrifugal machine.



THE STINER CLOTH FINISHING MACHINE.

To avoid these difficulties, Frank Stiner, 42 Island St., Lawrence, Mass., has invented and perfected a process of extracting the water from cloth by suction. The Stiner machine is shown in the accompanying illustration. The cloth is treated in the open width.

The principal part of the machine is an extracting cylinder connected with a vacuum pump. The cylinder is a three-inch brass tube with a narrow slit one-eighth of an inch in diameter along the top. This is covered with a sheet of leather the entire length of the slit (66 inches is the standard width), which is fastened to a loose wooden block and is kept pressed against the slit by the suction and the weight of the block. The cloth is passed between the cylinder and the leather, and the vacuum draws all the air out of the cloth as the piece passes over the slit, the leather preventing more air going in and also closing the slit beyond the edges of the cloth. No adjustment is necessary for goods of different widths; two narrow pieces can be extracted side by side.

It is claimed that cloth can be extracted more thoroughly and quickly by this machine than by any other process and that loose coloring material, alkali, soap and other foreign materials are removed from the goods, leaving the colors brighter and the cloth free from streaks and cloudy effects. The cloth is extracted in the open width and brushed back and face during the process. The water is drawn from the face to the back. There is no danger of explosion with this machine, as all parts are light and run at a moderate speed. The machine can also be used for dampening goods, gigging, or other finishing process. For this purpose the goods are first immersed in water and then extracted on the machine, which can be so regulated as to leave in the goods any desired amount of moisture.

Further information in regard to the machine can be obtained upon application to the builder.

Calender. Joh. Kleinewefer's Sons, Crefeld, Germany, have recently brought out a calender for cloth which is provided with a cast-iron top roll that is driven and weighted independently of the other rolls. It is claimed that by this arrangement the pressure of the last roll can be so regulated as to give much better results in the appearance and handle of the goods.

THE MECHANICAL ACCOUNTANT.

The multiplicity of calculations required in textile manufacturing make the mechanical accountant shown in the accompanying illustration of especial interest to the textile trade. This machine is manufactured by the Mechanical Accountant Co., 3-11 Warren St., Providence, R. I., and has proved its value in actual use for years by many manufacturing and commercial firms. It will add, subtract, multiply and divide and extract the square root and solve the many complex problems based on combinations of these operations.

The machine is now used in banks, insurance offices, mercantile houses, commercial colleges, universities and for scientific work, and its value as a saver of time and mental labor is beyond question. It stands in much the same relation to arithmetical computation that the typewriter does to correspondence, with the advantage of saving more than double the time and all the mental effort. This machine is not a listing machine which simply adds and prints. Where it is not absolutely necessary to have a printed list of each item as it is added, this machine is more valuable than a listing machine, as it performs addition much more rapidly, besides doing all other kinds of arithmetical work; it has no lever to operate, uses no paper and does not cost as much.

Although this mechanical accountant is a combination of keys and dials, it is constructed entirely on original lines. The computations are effected by pressing the several keys on which the various figures occur. Each key has two figures, a large and a small one. The large ones are used for addition and multiplication, and the small ones for subtraction and division. Its operation is very simple and can be learned in a very few minutes, though it requires time and practice to acquire rapidity and accuracy. There is no computing machine that is more simple to learn and operate. It adds all the columns simultaneously and proves the work at the same time.

The model B machine is enclosed in a metal case, 13 inches long, 7 3/4 inches wide,

2 inches high in front and about 6 inches at the back. The total weight is about 12 pounds and it has a capacity of 999,999,999 which can be increased in wider machines if desired. Following is a copy of a letter from a well-known Providence bleaching and dyeing concern using the mechanical accountant:

Gentlemen: Yours of the 6th inst. at hand, and in reply would say, regarding your machine, that we have had one for nearly a year and it has proved entirely satisfactory in every particular.

We use it principally for addition, in connection with our card system, where we find it a great help, both as to time and labor.

Yours respectfully,
Silver Spring Bleaching & Dyeing Co.

This mechanical accountant is the only computing machine on the market which is fitted with two sets of dials. This feature not only shows the place the operator left his work, in case of interruption, but also enables him to prove his work as fast as it is done.

MECHANICAL ACCOUNTANT.

By reference to the upper set of dials, which register each item as it is added, he is able to correct his work if a mistake is made, by adding or subtracting the proper number. This makes a second addition or checking from the list unnecessary to prove the correctness of the work.

Mr. Geo. R. Lawton, auditor of the American Woolen Company, writes in part regarding this mechanical accountant: "The device which is in sight by which the record is retained showing the last figure struck, is in my opinion the most useful feature, and gives your machine an advantage over other accounting machines."

Whatever facilitates arithmetical operations is of value, not only in the textile mill counting house, but also in the mill itself, where there is such frequent necessity of making long and complicated calculations for fabrics and material in process. Further information regarding this mechanical accountant can be obtained from the manufacturers.

PROTECTION AGAINST FIRE.

The value of private fire apparatus for the protection of individual buildings and adjoining property was thoroughly demonstrated in the Baltimore and Toronto fires, and, in fact, the Baltimore fire department admits that many buildings on the immediate margin of the devastated tract were saved only by the effective work of private apparatus. These buildings were supplied with either standpipes or pumps connected with wet-pipe interior sprinklers and dry-pipe sprinklers for protection from outside fires, storage tanks holding from 1,500 to 15,000 gallons being placed on the roofs. Besides saving the buildings in which they were located, these equipments stopped the advance of the fire, and undoubtedly many more buildings would have been destroyed in the absence of their efficient service. The buildings and contents protected by private apparatus in Baltimore were valued at five million dollars, and at Toronto the saving from private protection was similar in extent.

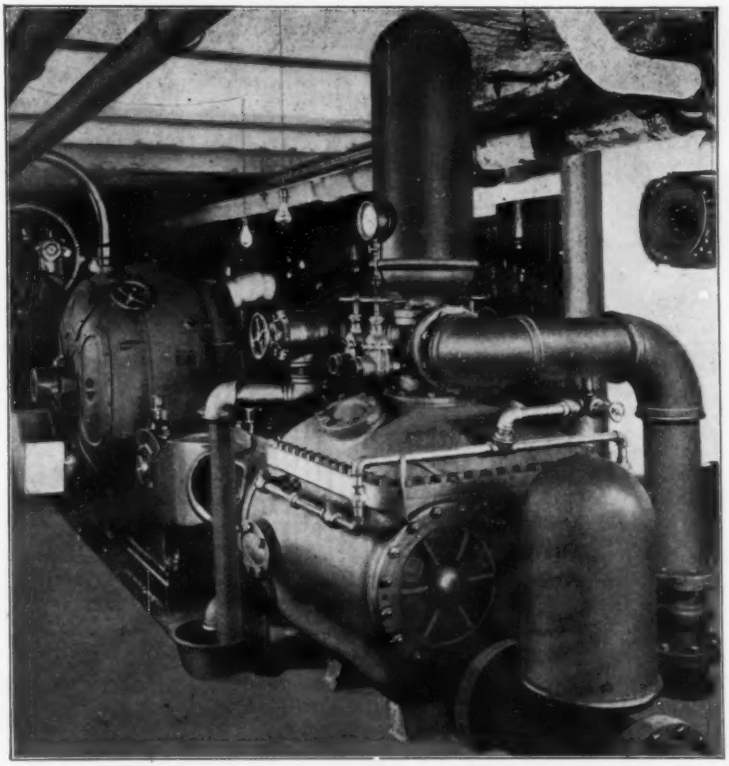
The fact that such apparatus is on the ground, in position and ready for action averts the destruction of much property by both fire and water. A fire is usually well under way before the city fire companies can arrive, arrange their hose lines and make necessary couplings and connections. A drenching of the entire building is then often required, while a comparatively small amount of water would have put out the fire in the first place. The immediate availability of private fire apparatus gives it a great advantage over any other form. The fire insurance companies have recognized the decrease of fire risk in property containing private protection, and consequently are able to reduce premiums by such a percentage that the property owner is in a short time fully recompensed for the cost of the installation. The disastrous conflagrations of the past year have stimulated interest in the development of fire apparatus, and a very extended adoption of private equipment is to be expected

A recent installation of considerable in-

terest is shown in the accompanying illustration. It is located in one of the largest buildings of its class in the world, Marshall Field's immense department store, occupying an entire block in the business section of Chicago.

The outfit was built by The International Steam Pump Co., 114 Liberty St., New York, and consists of a Laidlaw-Dunn-Gordon duplex Underwriter pump, connected by single-reduction gearing to a water-proof electric motor. The pump cylinders are eight inches in diameter by twelve inches stroke, having a theoretical capacity of 700 gallons per minute at 600 revolutions per minute against 140 pounds water pressure. The illustration gives a good general idea of the pump, showing the special attachments and the large pressure and vacuum chambers required by the underwriters' specifications. The pump is thoroughly rust proof in all moving or wearing parts, insuring prompt and smooth running when occasion arises.

The motor, which was furnished by the Chicago Edison Co., is shunt wound for 220 revolutions per minute at 230 volts, and is enclosed, all connections being carried through pipes screwed into the frame, so that the device may be flooded without affecting its action. The fields and armature coils are cooled by fans on the armature, the ventilator in-take and outlet being visible in the photograph. This combination has been designed to insure reliability and certainty of action under all conditions.



THE LAIDLAW-DUNN GORDON DUPLEX UNDERWRITER PUMP.

One of the important considerations affecting the selection of a device of this sort is the readiness with which electric power can be obtained and utilized; there being hardly a building where a reliable supply of electric current cannot be cheaply and easily obtained. There is, further, no maintenance expense, as with steam apparatus.

A NEW HEDDLE.

A steel wire heddle possessing many new and useful features, made by the Steel Heddle Manufacturing Company, Philadelphia, Pa., is shown in the accompanying illustration. The heddles are spaced to any density required. This prevents locking of the heddles on the bars and relieves the warp ends of a great deal of tension.

The heddle is made out of flat steel and is very thin. This feature is especially valuable, because the thinner the heddle the more room there is for the warp thread to move up and down. It is claimed that with the new heddle crowding on the heddle bars with close weaves is unknown.

In the silk trade, where this harness has been used to a large extent for seven years past, it is not unusual to weave with as many as 55 to 65 flat heddles per inch. The ordinary round wire heddle often works badly with more than 20 to 25 heddles per inch.

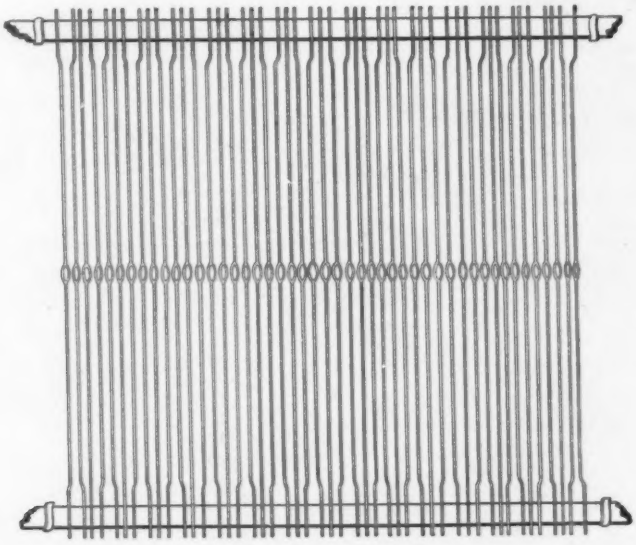
The new heddle is made entirely out of one piece of cast steel; there is no solder or soft metal about it to wear out quickly. In fact numerous instances can be shown where these harness have had a continuous run for six years on raw silk weaving.

Another distinctly novel feature is the way these heddles are shipped. Usually the round wire heddle is packed in bunches and they have to be put on bars before they are ready to use.

All flat steel heddles are threaded and counted on bars when they are shipped. This means a considerable saving to the manufacturer.

The heddles are made automatically and they are, consequently, smooth and uniform.

The manufacturers claim they are considerably cheaper than imported heddles and will fit on any style heddle frame now in use, without change of any part.



A NEW STEEL WIRE HEDDLE.

Continuous Open Width Cloth Bleaching Machine. Henry Simon, Manchester, England, has placed on the market a continuous open width cloth bleaching machine, the invention of Manuel Muntadas y Rovira, Barcelona. By an ingenious method of rolling the machine, a large quantity of cloth is stored in chambers during its continuous passage through the machine. It is claimed that this machine combines all the advantages of the ordinary continuous process and kier method of bleaching. A description of the Rovira machine appeared in the January, 1904, issue of this magazine.

THE McCABE DOUBLE SPINDLE LATHE.

The repair shop is an important department of a textile mill. If well equipped it increases the production of the mill by enabling the machinery to be kept in good order and repairs to be made promptly in case of a breakdown. The lathe is probably the most important machine in the repair shop. In the accompanying illustrations is shown the McCabe double spindle lathe, which a textile mill superintendent refers to as "a whole repair shop in itself."

Fig. 1 shows the boring of a 36 in. pulley. This is a comparatively easy job but illustrates the general all round usefulness of the machine. All large jobs are done on the upper 48 inch spindle, which has a triple-gear ratio of 22 to 1. For extremely heavy work, an internal geared face-plate is invariably used, which gives a ratio of 72 to 1. This is ample power for anything right up to the full swing.

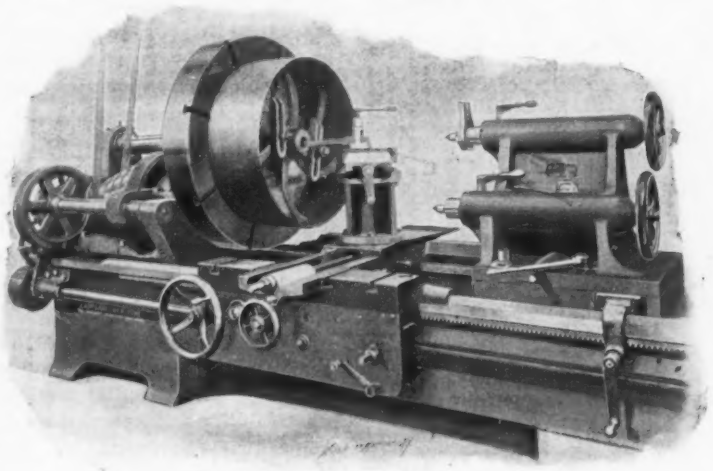


FIG. 1.

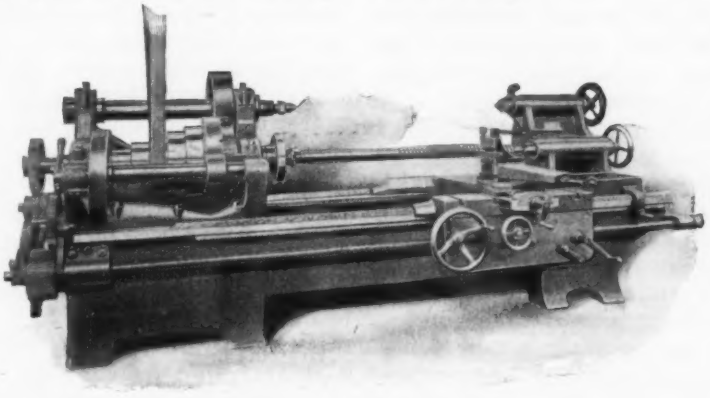


FIG. 2.

Fig. 2 shows the 26 inch part at work on a coarse pitch screw.

The leading characteristic of this machine

is convenience. It is but the matter of a very few moments to change from one size to the other. It is designed on simple and improved lines.

Instead of the regular arrangement of gears at the back, as in regular style lathes, the gears are placed at the front of the cone, which materially increases the power.

Some 500 shops or over have already installed this "double spindle," about three-fourths of them being in operation in repair shops connected with cotton, woolen, silk, paper and lumber mills, plantations, etc.

We understand that the cost is but half that of the regulation 48 inch lathe.

The manufacturer, J. J. McCabe, 14 Dey Street, New York, has literature fully illustrating and describing this extremely interesting lathe, which he will send on application.

IMPROVED SIZING PRODUCTS.

New and important products for use in sizing warps, which should interest manufacturers and sizers generally, are manufactured by the Arabol Manufacturing Company, 100 William street, New York City.

One is an emulsifier, called the Arabol Size Blender, and is adapted for use with starch and tallow, or with flour, China clay, and fatty substances. Its principal use is to keep the size in a thorough emulsion and it has a softening effect on the yarn. Arabol Size Blender is a soft, gelatinous material. As size requires, before using, to be well blended together, this material gives such results, and makes the various ingredients, when mixed, into a proper emulsion. All weaving mills using tallow with starch, China clay, or flour, should test this material, and it is claimed when used there will be no trouble with size separating. It cannot be used with chlorides.

Another new product of the Arabol Manufacturing Company is their International Prize Starch, which, it is said, cooks thinner than the old-fashioned potato starch, and penetrates the yarn easily, giving stronger sized warps. It binds well, causing very little "fly," and it is very smooth and for most fine and medium yarns compounds need not be added, only a small amount of softening is required.

For further particulars apply to the Arabol Manufacturing Company, New York.

NON-SHRINKABLE WOOLENS.

The public, and indeed until recently, manufacturers have always believed that woolen goods will always shrink with washing, and have come to expect that as a natural and unavoidable characteristic of wool products. They realize, in a measure, the advantage it would be if certain wool fabrics could be rendered non-shrinkable, but we do not think it is generally appreciated how far reaching the results will be when it is understood that wool fabrics may be rendered absolutely non-shrinkable.

The Nevershrink process of C. Scott Althouse is claimed to accomplish this radical result, and as one after another adopts it, its practicability and success are becoming more generally recognized. We think first of all, of the advantage of being able to wash woolen underwear in the same manner as cotton fabrics without the care that is exercised by careful housewives, for fear the garments will shrink and be useful only to persons of smaller size or discarded altogether. This has been one of the serious obstacles to the wider use of woolen knit underwear and hosiery, and parties who have used this Nevershrink process affirm that it has entirely overcome this difficulty.

Just how it accomplishes this, at the same time apparently leaving the wool exactly as it was before treating, is not yet scientifically explained. The theory of shrinking or felting has always been that it is due to the interlacing or interlocking of the scales of the wool fibre, but under the microscope, wool treated with Nevershrink process shows these scales with apparently the same appearance as before treating and none of the other properties appear to be injured. It is simple and has already aroused much interest among woolen manufacturers.

Charles H. Heyer, 1501 Real Estate Trust Bldg., Philadelphia, is the selling agent of the Althouse process, and at his offices gives information as well as shows samples and practical demonstration of the process.

THE NERNST LAMP AS A FACTOR IN COMMERCIAL LIGHTING.

A paper read by E. R. Roberts before the Michigan Electric Association, Detroit, Mich.

While it is probable that there are many who are already acquainted with the Nernst lamp, not only in its general construction, but also in the electrical characteristics of its elements and the history of its developments, still it may be well to touch briefly upon these points for the benefit of others who possibly have not as yet given time or thought to the study of this latest factor in commercial electric lighting.

The first public demonstration showing that the Nernst lamp had reached the commercial stage, was made at the Buffalo Exposition in 1901.

Since the birth of the company in the fall of that year, the lamp has become widely introduced, and the results from a number of large installations show conclusively that the Nernst lamp is an important factor and represents a marked advance in the lighting field. It is manufactured by the Nernst Lamp Co., Pittsburg, Pa.

The "glower," or the part which gives the light, is the distinguishing feature of the lamp. It is made in the form of a small rod of white, porcelain-like material, about 1 inch long and 1/32 of an inch in diameter. Fastened to each end of the glower are platinum lead-wire terminals. At ordinary temperatures, the glower is practically an insulator, but becomes a conductor when heated to about 700 deg. Centigrade. This means, of course, that the resistance constantly decreases as heat is applied. After current starts to flow, no further heating from the external source is necessary, as the I^2R energy, supplied by the current, is not only sufficient to maintain the glower in an incandescent state, but causes the resistance to decrease still further with a consequent increase in current. This cumulative action, if not arrested in time, causes the current to rapidly attain a very high value, and the glower finally breaks down or flashes out. It, therefore, becomes necessary to place in series with the glower a resistance having a positive temperature correction; just opposite to that of the glower. This resistance, which we call the ballast, consists of a very fine wire of pure iron, suitably mounted in a hermetically sealed glass tube, from which the air has been exhausted, and replaced with an atmosphere of hydrogen. This prevents oxidation of the iron and still serves as a medium to conduct the generated heat from the wire. The ballast is so dimensioned throughout that with a rise in voltage above the normal operating point of the lamp, there is a rapid increase of the ballasting resistance. In figures, this amounts to about 140 per cent. for a rise of 15 per cent. in line voltage. While this effectually protects the glower against momentary fluctuations of 25 per cent. above normal lamp voltage, the ballast is liable to injury if the lamp is operated at more than 5 per cent. overload continuously. On well regulated circuits, where the lamp will not be subjected to an overload exceeding 5 per cent. for any length of time, the life of the ballast is practically indefinite and its characteristic and function is not appreciably impaired with age. This can hardly be said of the glower; like all other sources of light, there is gradual decrease in the intensity of the rays emitted. Before being used, the surface of the glower presents a smooth, white porcelain-like or chalky appearance; after being in service, say 500 hours, this surface is rough and crystalline in appearance. It is this change in the structure of the glower, from an amorphous to a crystalline state, that is supposed to cause a rise in its resistance. The resultant decrease in candle power, from its rated value on a constant potential circuit, should not exceed 20 per cent. in 800 hours.

In the early part of the life of the lamp there is a decrease in intensity and the rated candle power is not reached until after about 25 hours' run; for instance, while the rated candle power of the single glower lamp is 50 the initial candle power would average 60. This initial excess is not contracted for, and may be considered as a gift to the consumer.

Being composed of rare oxides, incapable of further oxidation, the glower does not require a vacuum, and, in fact, the presence of as much oxygen as is found in the atmosphere

is necessary for its successful commercial operation. In vacuum, the glower is rendered much less stable, and requires a correspondingly greater amount of ballasting resistance. Hydrogen and nitrogen have the same effects in a lesser degree, while the characteristics in air and oxygen are practically identical. Operating on direct current, the glower exhibits all the characteristics of a solid electrolyte, and its life is greatly shortened. Its life may be prolonged somewhat by reversing the current at intervals, which probably accounts for the fact that, when operated on alternating current, the life increases with the periodicity or number of current reversals.

In the automatic lamp, which is the commercial type of lamp now on the market, the glower is brought to a conducting temperature by means of an electric heater, consisting of fine platinum resistance wires, wound on porcelain tubes; the whole being coated with a white refractory paste which acts as a protection to the windings against the intense heat of the glower, and also as a light-reflecting surface. The heater is thrown in and out of service by an automatic cutout which, in turn, is actuated by the glower current.

Contrary to the practice abroad, the American Company have adopted a standard glower, taking .4 amp. at approximately 210 volts, and lamps of different intensities are made by varying the number of glowers. In this connection, it may be mentioned that the manufacturers have recently developed, and are about to market, a four-glower lamp, which will have the same external appearance as the present six-glower unit. This lamp will be equivalent in watt consumption, to that of the standard 5 amp. multiple A. C. arc lamp, and should prove to be a very popular unit for general commercial lighting.

It may be seen, from the accompanying table, which gives a list of the present standard Nernst units, together with their respective wattage and light intensities, that the efficiency increases with the number of glowers. This is readily accounted for by the resistance temperature characteristic of the glower, and the fact that the several glowers tend to heat each other; this mutual heating effect being, of course, greater as the number of glowers is increased.

Unit.	Wattage.	Mean Hemispherical Candle Power.
1-Glower Lamp	88	40.2
2-Glower Lamp	176	86
3-Glower Lamp	264	131.7
4-Glower Lamp	352	185
6-Glower Lamp	528	292.5

MAINTENANCE.

Unlike the incandescent lamp, the frame and connections of the Nernst lamp form a permanent structure having an indefinite life, but its perishable parts have from time to be renewed. Of these the ballast has a life so long, averaging about 25,000 hours, that in an organization for maintenance it plays little part. The heater has also a very considerable life, the period averaging about eight months in ordinary use. The glower, however, like the incandescent lamp filament, has a practically definite term of use, at the end of which it would be advisable to replace the glowers whether burned or not. 800 hours are given as the guaranteed average life on 60 cycles.

Two systems of maintenance for the Nernst lamp have been employed. In the one, all the installations within a certain radius are maintained for a fixed sum per month, from a central maintenance bureau which may be directly in control either of the Nernst Lamp Company or the central station on whose circuits the lamps are operating. This department of the lighting company is analogous to the meter department which is now becoming an auxiliary to all well managed lighting plants. Such an organization involves the services of an inexpensive class of help, consisting of an inspector, who alone, or with one or more assistants in the case of the larger plants, operates the maintenance system, visiting all installations periodically; for example, commercial installations may be visited weekly and residential installations once per month, the user being instructed how to act in contingencies which may arise during the absence of the inspector. A complete stock of Nernst lamps is carried in the repair department. The work to be done here is so simple, owing to the careful provision made in the design of lamp details for easy renewal, that a boy or girl can, in a short time, acquire the necessary skill. In some

central stations, where the Nernst business has not yet assumed extensive proportions, the labor item may be reduced to a minimum by having the arc trimmer include the Nernst maintenance in his regular duties.

The second system is especially applicable to the larger installations and those in isolated localities. In these cases the maintenance work may be entirely taken care of by the building janitor or electrician who has previously received some instruction and training, either at the company's works, or from an expert repairman. Suitable quarters would be provided in the building in which a limited stock of repair parts and facilities for renewal work would be available.

The total cost of maintenance under these conditions will be comparatively low, provided the maintenance work is executed in a systematic manner; a certain portion of the day being given to a complete inspection of all lamps installed, the repairing of defective holders being afterwards done in the repair room.

Like the arc lamp, the Nernst consists of three parts, viz., the lamp body, the "holder," and the globe. The renewable elements of the Nernst lamp, viz., the glowers and heater, are mounted on the holder, which, in turn, is mechanically as well as electrically connected to the lamp body by a number of German silver prongs on the holder, which are inserted and held by friction in corresponding aluminum sleeves in the base of the lamp body, thus making the replacement of the holder a very simple matter. Without going any further into detail, it would therefore seem evident, in view of the general similarity in construction, that the maintenance of the arc and Nernst systems is much the same. In the arc system the lamps are periodically inspected, globes and shades cleaned, carbons renewed and occasional faults in the internal mechanism, or a burned out coil, repaired. In the Nernst system the requirements are cleaning glassware and replacing burned-out holders. The extra labor which is necessary for the subsequent repair of holders in the Nernst system may be counterbalanced by the extra time required in the arc system for more frequent inspection tours; the average life of the glowers being about ten times that of the carbons.

RELATIVE EFFICIENCY.

Recently some work has been done at the Nernst Lamp Works in Pittsburg toward obtaining a more practical comparison of modern electric illuminants along the lines originally suggested by Mr. Wurts. A room approximately 20′ by 40′ was divided by means of an opaque curtain into two compartments, each 20′ by 20′ and both compartments furnished in an exactly similar manner, the only difference being that one compartment was lighted by Nernst lamps of different types and the other with arc, meridian and incandescent lamps. The illuminants in both rooms were arranged to the best possible advantage for each particular illuminant for effective illumination; each particular type of lamp being separately connected to a common switchboard, carrying an indicating watt meter which, in turn, may be quickly connected to any particular circuit. The one room may thus be lighted by any one type of Nernst lamps, and the other by the arc, meridian or incandescent lamps at the same time, so that an observer stationed at the intersection of the dividing curtain and the wall may compare the general illumination of the two rooms. The average opinion of a number of observers as to the respective merits of the lamps, was based upon the general appearance of the rooms under the illumination furnished, and special visual tests in each room. While the work is yet in an uncompleted state, the results so far point to the following conclusions:

The one-glower Nernst is equivalent in effective illuminating power to 3 16-candle power incandescent lamps.

The three-glower Nernst is equivalent in effective illuminating power to 9 1/2 16-candle power incandescent lamps.

The six-glower Nernst is equivalent to 20 16-candle power incandescents.

The six-glower Nernst is somewhat better in effective illuminating power that the 7 1/2 ampere multiple A. C. enclosed arc.

The new four-glower Nernst is equivalent in effective illuminating power to the 6.6 ampere multiple A. C. enclosed arc.

Dyeing, Bleaching, Printing, Etc.

THE LISLE FINISH AND MODERN DYEING METHODS.

Every cotton manufacturer knows what lisle thread is, and while he may not use it in his mills, especially if he is a hosiery manufacturer, yet he is anxious to have his product pass for or possess other qualities resembling real lisle thread hosiery. Ever since the originators of the aniline black dyeing process gave to the world their valuable method of dyeing other workers in the textile field have been equally active in devising ways and means whereby the ordinary grades of cotton that are usually used might be so treated as to pass muster with a lisle thread finish.

There are in this country many dyers who are endeavoring by all means at their command to take their dyed yarns or hosiery and subject it to one or several processes in the hope of giving a more or less permanent lustre, unmindful of the fact that the true lisle thread itself is made by and is the result of a special manufacturing process, essentially mechanical, and in no way dependent upon chemical or dyeing operations or finishing compounds.

Years ago, and during the healthy development of the aniline black dyeing industry, untold quantities of the real lisle thread were dyed, which made for itself and retained a very high position in the trade. But as the price of this yarn was high, the desire then became strong to impart the lisle appearance to other classes of yarns, so that a demand was at once created for finishes or compounds that would impart to the dyed goods the peculiar finish.

Aside from any other considerations, true lisle yarn has but little, if any, fly on its surface, while other kinds of yarns have, and it is the presence of this fly that gives rise to the demand for a process that will overcome it, and as most of the finishes are only capable of laying the fly against the body of the thread, only a temporary remedy is at hand.

Later it was found that friction in a hot and dry atmosphere gave a finish that answered fairly well, but this is simply the breaking off of the fine cotton fibres on the surface of the thread, and is really a tendering of the entire fabric. This is carried to a great excess in the so-called aniline black oxidizing machines, which are extremely valuable for developing the full intense black of the cotton, when suitably dyed for that operation, but at the risk of other advantages. There is no doubt but the aniline black process causes the fibre to become brittle and harsh, so that a softener or finish is necessary.

During the last few years the hosiery manufacturers have found that the more improved sulphur blacks require no subsequent oxidizing treatment for shade development, and during the process of dyeing require but little working of the goods, so that the natural condition of the yarn remains the same throughout every process. It is a mistake to suppose that any dyeing process is at the same time a finishing process, or that a yarn originally devoid of lustre can be knitted into a stocking, then dyed and dried, and possess a lustre or finish equal to a lisle stocking.

It is likewise a mistake to suppose that any finish can be made and applied to such yarn that will yield a permanent lustre; any such finish will remain with the goods only until they are first washed. Of all the dyeing processes that leave the cotton in a condition best suited for rational commercial finishing, none is better than those using the sulphur colors.

Rotary Fulling Mill. Maschinenfabrik H. Krantz, Aachen, Germany. A rotary fulling mill designed to prevent mill wrinkles. The face of each roll is beveled instead of being parallel with the shaft. It is claimed that this causes a constant change in the folds of cloth during the process of fulling, and thus prevents streaks from being formed by reason of the cloth becoming set in wrinkles.

BLEACHING OF WOOL AND SILK.

NOTES ON THE USE OF THE PEROXIDES.

From 1818, when peroxide of hydrogen was discovered by Thessard, to 1875, was a period during which this substance was heard of but little, and it was only after the latter date when Hopkins and Williams made use of it in London as a bleaching agent.

Prior to this time wool was always bleached by means of sulphur, and the results obtained, in many instances excellent, were as varied as the grades of wool subjected to the process, so it was to be expected that any process or bleaching substance that would deliver the manufacturer from the uncertainty of the then current process would be hailed with delight, and when peroxide of hydrogen was so reduced in price as to be within the cost limits for uniform bleaching, it became a firm favorite, and has since retained this position.

Peroxide of hydrogen is a substance resembling water in general appearance, but differs from it chemically in that it contains twice as much oxygen, half of which is held in combination rather feebly, and which is the active bleaching substance when set free by suitable chemical means. Pure peroxide of hydrogen is neutral to test papers, but the commercial grades are always acid in reaction, because the manufacturer knows that in large quantities the crude article is always stored under conditions quite different from the medicinal grades. The acidity is due to the presence of a slight amount of sulphuric acid which retards decomposition.

When ordinarily ordered from the jobber or manufacturer, peroxide is shipped of a strength known as "12 volume," and signifies that one unit volume of the article will, when properly decomposed, yield twelve (12) equal unit volumes of oxygen gas. The strength of peroxide is always referred to in this way, and is thoroughly understood by all consumers and the trade, but it is not assayed or tested by the volume of gas given off. To test properly peroxide of hydrogen is a matter of great importance to the head bleacher, and he should be personally and practically familiar with the process and operation, so as to be able to control absolutely his bleaching solutions and reduce or increase their strengths accordingly.

The solutions for the purpose are two, one consists of a decinormal solution of potassium permanganate, and is made in the laboratory by dissolving 3.156 grams of the salt in a sufficient quantity of distilled water, and when solution is complete, dilution to 1,000 cc. This solution must be made very accurately, and when the bleacher has no laboratory facilities or chemist to go to, it can be made by any pharmacist. The other solution is dilute sulphuric acid, containing about 50 per cent. of strong acid. The apparatus required is very simple, and consists of two or three 2 cc. pipettes, and a 25 cc. burette provided with a glass stopcock—the usual rubber tube and pinch cock will not suffice. A few beakers, glass rods and some blue litmus paper complete the equipment.

The process of testing is very simple. To ascertain the strength of the peroxide of hydrogen, take 2 cc. from the carboy, dilute with about 30 to 50 cc. of water, add a few drops of the sulphuric acid, and from the burette add, a drop at a time, the permanganate solution, stirring all the while, until a faint, though permanent pink coloration remains, and as each 1 cc. of permanganate solution is equivalent to .085 per cent. of peroxide of hydrogen, it is easy to calculate the percentage strength of the same, thus: suppose in our test, we used 42 cc. of permanganate for our test, then $42 \times .085 = 3.57$ per cent. of peroxide of hydrogen, and if we multiply 3.57 by 3.295 we obtain the volume strength, which in this case is 11.76 and shows that our solution is close enough to 12 volume to be accepted as such.

Practical bleaching of wool is rarely done with dilute solutions of peroxide of hydrogen testing above 1.75 volume or requiring more than 6 cc. of permanganate, and the object of these calculations is to show the ease of control that the bleacher has with this simple chemical outfit and reagents.

Practical bleaching with peroxide of hydrogen requires that the first bath be very much stronger, and of necessity, more costly than the succeeding baths, which are brought

up to the original strength of the first boil by the addition of a relatively smaller quantity of peroxide.

For each 500 pounds of woolen yarn to be bleached there will be required about 50 gallons or 500 pounds of a 12 volume peroxide, together with sufficient silicate of soda or other cheap alkali to neutralize the acid. These several additions being the total volume of the bath up to about 600 gallons or 120 gallons for each 100 pounds of yarn.

To bleach properly requires that the material be well scoured and cleansed of all grease and oils as these latter, especially if of mineral origin, act as resists, and consequently the wool fibres at that spot are protected against the action of the peroxide. The bath and the stock being ready, the latter is immersed, worked for a few minutes to ensure perfect penetration, and then a wooden frame or lattice is put in position and secured in place so as to keep the wool from working out of the vat, owing to the innumerable bubbles of oxygen gas that adhere to the fibres.

The strength of this solution at the time of the wool immersion should be such that 2 cc. require 6 cc. of permanganate. At varying intervals this test should be repeated so that by the time the consumption of permanganate has been reduced to 3 cc. the bleaching will be over. This should require about six hours, and when the run of affairs is well in hand, the drop will be quite gradual of 1/2 cc. per hour.

To prepare the bath for a second batch, add about 10 gallons of peroxide; mix well; neutralize with silicate of soda, testing with litmus, and observe the strength as in the former case with permanganate, taking care that the strength does not exceed 6 cc.

When the bleached wool is lifted from the vat, allow the excess liquor to run back; wash the wool in water containing a slight amount of sulphuric acid; rinse well in water and dry.

The temperature at which bleaching progresses best is still an open question. As a rule, the normal temperature of the tap water is quite sufficient, but lukewarm is apparently not objectionable. The only precautions to observe is that no exposed metal parts come in contact with the bleaching liquors, that the bleach tubs are clean and not used for anything else.

Goods of any kind capable of being bleached by this process are always permanently bleached—a distinction from sulphur bleached goods, which yellow with age. For certain classes of goods peroxide bleaching is the only kind permissible, especially for velvets, etc., to be used by silversmiths as linings for chests to contain silverware. Silk may be very readily bleached, as a rule it should be thoroughly boiled off and then rinsed clean and free from soap or alkali. The bleach bath should be made up with:

12 vol. peroxide of hydrogen..15 gallons
Water .....100 gallons

The free acid is neutralized with ammonia water. Enter the silk, wetting thoroughly by working for a few minutes, and keeping it well below the surface of the bath, giving an occasional turn. For this process the temperature may be gradually increased to 165 degrees F., more or less, and if maintained at this point the time of bleaching need not exceed four hours. However, the best results are always secured by working cold, as there is then no loss of oxygen which always occurs when heat is applied.

Tussah silk, owing to its peculiar nature, requires heat to be successful, unless a very long time is given to the immersion, but as a matter of fact, this fibre has never been successfully bleached, and white effects can only be obtained by subsequent white dyeing —an operation which it is needless to remark is not bleaching.

Cotton can be bleached with peroxide of hydrogen, but the process is much more costly than the corresponding bleach obtained by means of chloride of lime, so that at present, the hope for the peroxide is small.

The remarks made here on peroxide of hydrogen apply with equal force to peroxide of sodium, the details for testing which are identical with those just given—for it must not be forgotten that peroxide of sodium, a solid, must yield peroxide of hydrogen upon decomposition with some acid, usually sul-

phuric acid, before the bleaching process is ready.

While it is possible to employ the peroxides for many bleaching purposes, they are somewhat restricted, due to the cost of operating upon a large scale, but there is no doubt that for wool or silk they stand pre-eminently the best, and that modes of application are sadly needed to permit these products to be economically used for other purposes.

FORMALDEHYDE, AND ITS USE IN COTTON DYEING.

The use of this substance has during the last six or seven years been very greatly extended throughout the cotton dyeing trade, especially in places where the straight dyeing —non-diazotizable—direct blacks are employed.

When such blacks are dyed upon cotton yarn, for example, and common salt or Glauber's salt has been used as the assistant, it will be noticed that the finished color or shade, though deep and bright enough, fails to meet the usual soap tests of milling, and that as a rule, they bleed seriously into white yarns, etc. From time to time, many remedies have been suggested to overcome this difficulty, among the most promising being the use of neutral metallic salts in a separate bath, but while arresting the bleeding tendencies, there resulted a very undesirable alteration in shade, and to such an extent, and of such a nature that it was difficult to remedy. The metallic salts made use of principally were those of chromium, copper and iron, and it is needless to observe that the latter were the least effective, while the two former yielded very much better results. It remained, however, for someone to discover that a very much diluted solution of the commercial 40 per cent. formaldehyde, when used at a temperature not exceeding, say 165 degrees F., that the dyed black was so altered in composition that it was permanently fixed upon the yarns.

After this simple, though extremely important fact became known, there were placed upon the market solutions of formaldehyde of all strengths, some plain, some slightly tinted, others compounded with various substances possessing real or imaginary properties, but effective in preventing the bleeding of dyed direct blacks, and without any appreciable change in shade.

Formaldehyde is now manufactured on a large scale, and is consumed in many industries besides dyeing; it is used for embalming purposes, preserving meats, vegetables, milk, etc. It is obtained from wood alcohol (methyl alcohol), the vapors of which, when properly mixed and with a due proportion of air, and then passed over incandescent matter contained in red-hot tubes yields the product that is, when condensed and collected, known as formaldehyde, and is generally of 40 per cent. strength.

In practical use, about one quart of the usual commercial strength formaldehyde will answer all requirements for each 100 pounds of yarn, and will serve to fix the color, while for weaker shades a corresponding reduction in the quantity will suffice.

The fixing bath is always separate from the dye bath; the yarn is always washed before fixing, so as to yield clean colors. The temperature for starting is about 120 degrees F., and gradually increased to 165 degrees, the duration of the immersion being about half an hour, when it is lifted, washed and dried.

Formaldehyde has no action on the fibre, and none on any of the colors, except that the shade of most of the direct blacks is materially improved by the treatment. It should be preserved in carboys or barrels, and stored in cool places, never near boilers nor in the heated corners of dye houses, and in withdrawing portions for use, care should be taken not to inhale quantities of the fumes that arise, as they are quite irritating to the nose and eyes.

Cloth Mercerizing Machine. C. G. Haubold, Chemnitz, Germany. An improved machine for mercerizing cotton cloth. The liquor is extracted from the cloth by squeeze rolls before the fabric is brought under tension. It is claimed that the new machine effects a material saving in alkali by preventing waste of liquor.

ON THE SPONTANEOUS IGNITION OF NAPHTHA.

Occasionally accidents are recorded in the daily press of instances where garment dyers' and dry cleansers' establishments are destroyed through fires resulting from no apparent cause. There have been during the past ten years many such fires, and the result of the investigations to ascertain the cause has rarely thrown much light on the subject.

As a general rule, the operator in charge of the process exercises the usual precautions, excluding all fires or light, and providing for ample ventilation, and even then, serious consequences follow.

It must be said, however, that in but few places where such work is done, every possible safeguard is taken, mainly because the confines of the establishment do not permit. Where such is the case, dry cleansing, so called, with inflammable fluids giving off vapors which, when mixed with air are explosive, should not be attempted.

Dry cleaning, as a process, is extremely simple, and the results obtained even with the most delicate garments are so superior to those obtained by the older or wet process, that comparison is out of the question, but in order to equip a plant or establishment in a proper manner requires an outlay of some money, and attention to details.

In the first place, the storage of the naphtha is to be provided in the form of a shed or separate brick house with only one door, this assumes that a fair sized business is contemplated, and not an occasional garment. Next, proper soaking tanks, tubs or vats, located away from any building where fires or naked lights are used. These tubs should be metal, and provided with covers of the same material. They should have a draw-off at the bottom to obviate tilting.

To handle properly and recover the dirty benzine or naphtha, a number of processes have been recommended, and proprietary substances sold at varying prices to be added to the spent naphtha to precipitate the dissolved dirt, etc., but the distillation process is the one that is most satisfactory and economical, as by it the maximum quantity of naphtha is recovered in a state of absolute purity, and free from all dissolved or suspended impurities.

A steam still is the only one permissible, and for this purpose should be made of iron or copper, and where any business is contemplated the cost of this piece of apparatus should not be considered, as it will pay for itself very shortly.

Spontaneous ignition of benzine vapors can be guarded against only by observing all precautions, and as most fires originate at the cleansing vat it is essential that the storage of benzine and the recovery plant should be in another building and sufficiently far from the cleansing room.

The ignition is usually attributed to various causes, but it is now generally regarded as being due to electricity generated by friction of the wet fabrics against the cleansing agent and to overcome the serious consequences that usually follow the electrical spark, various expedients have been tried, the most successful, so far, being the solution of a small quantity of oleate of magnesium in the benzine, say 30 grains to each gallon of benzine. This will act as a conductor for electricity and thereby materially reduce, if not entirely prevent any possibility of spontaneous fires.

An ideal dry cleansing plant should be arranged so as to have every operation separate and distinct from the other, and at the same time close enough together to offer no delay in forwarding the garments. There is no reason why the consumption of benzine should not be reduced to a minimum, through the erection of recovery stills into which the garments soaked in benzine as they emerge from the vats, could be thrown. Such a box still is possible, and its use would reduce the expenses of running the plant very materially.

The use of benzine soaps—usually designated "French"—is greatly on the increase, they consist essentially of lime soaps jellied with naphtha or some other volatile hydrocarbon, and as a rule, carry varying proportions of water. Their use, aside from the detergent action, also mitigate against the possibility of spontaneous fires.

REFINED LOGWOOD EXTRACTS.

While there are many acid colors upon the market, each intended to displace logwood as a dye for blacks, the fact remains that logwood manages to hold its own, and also to interest chemists and manufacturers of extracts, so that there is a gradually increasing number of products prepared from logwood, each of such a degree of purity, that the dyer is indeed fastidious who still adheres to the use of crude chips as his source of coloring matter

There was a time when some dyers held to the assertion that the bloomiest blacks could only be obtained from chips, no matter how pure an extract was made, but at the present time, the very best chips are no comparison to the results secured with many extracts that are sold only as "ordinary." Logwood extracts were at one time only a thick paste, of uncertain strength and composition, and which frequently contained substances that had no business there, but since competition has become keener along certain lines of manufacturing, and the demand has been for products of more definite strength and value, the dye works have arisen to the occasion, and brought out a line of extracts that are superior to anything that the "old dyer" ever dreamed of.

Without entering the technical details of the processes by which these various products are obtained, nor to take up space explaining the various qualities behind the several fanciful trade names now so familiar to all, let it be understood that the porous, or so-called crystalline extracts are the richest in tinctorial value, and will give the most for the money.

Many dyers judge an extract, either paste or dry, largely by its cost. This is entirely wrong, as in hardly one instance is the price of an extract a guide to its strength. The only safe means of judging the quality of an extract is by a comparative test against a type of known cost and strength taken as a standard, making the test under exactly the same conditions of both volume, ingredients, time and temperature. It is absolutely useless for any one to attempt to form a conclusion regarding any logwood product without such a test.

By the improved process now in use, the extracts on the market are almost free from tannins and resinous bodies, which always accompanied the older qualities. These extracts are more soluble, dye more evenly, and leave less sediment or dirt in the pieces.

The high grade refined extract of logwood is a product that when properly used by an experienced dyer, that is, one who knows logwood, and what he ought to get from it—will yield results that cannot be equaled by the infusions made from the chips.

Solid extract of logwood is regarded by the writer as being the most satisfactory of all the several forms in which logwood comes, it is clean, easily handled, does not run or become like tar, there is no leakage or other objectionable features, owing to its peculiar glassy structure, it is the one form which is incapable of being adulterated, each block, of necessity, being exactly like every other in composition and strength. While the granulated extracts, when pure, are very good, they have the tendency to melt or run together in the generally steamy atmosphere of the dyehouse.

The objection to solid, refined extracts is that they are hard to dissolve, but this objection is unfounded and not borne out by the facts. Any soluble substance will remain undissolved a long time if it is not stirred, and solid extracts are no exception. If the fragments are thrown into the warm or hot water and then poled, stirred, or raked up, the lumps will dissolve very easily. The insolubility of a solid extract of logwood can generally be traced to a lack of activity on the part of the kettle hand.

Open Width Dyeing Machine. Henry Giesler, Molsheim, Germany. An open width dyeing machine built on the principle of the jigger. The two rolls on which the cloth is alternately wound are perforated and the dye liquor is forced through the cloth by a pump. It is claimed that by this combination of the jigger and the circulating system of dyeing, the color is uniform from one end of the piece to the other.

SILK WEIGHTIN .

Silk will continue to be weighted for some years to come, although it is a practice which experience shows, sooner or later, results in the deterioration of the material, particularly if the weighting has been done by tin preparations. For dark shades and blacks the usual mode of weighting is by the use of iron nitrate, tannin matters, etc., a method already described in detail in this journal. For colors in general, the most commonly practised method is with tin chloride, sodium phosphate, alumina sulphate, and sodium silicate: a rather complex process. By it, however, a wide degree in the extent of weighting can be attained.

At one time the silk was treated in the raw condition, but now the weighting is generally done after the silk is boiled off. The first operation consists in immersing the silk for one and a half to two hours in a bath of perchloride of tin of 45 deg. Tw. It is at first well handled, so as to get it thoroughly well saturated with the liquor, then it is allowed to steep. Perchloride of tin is sold for dyer's use in the form of a solution of 100 deg. to 110 deg. Tw. It should be free from tin crystals and from nitric acid. Some samples may contain oxychloride of tin; this is not a desirable constituent as it has a deteriorating effect on the silk. To use the strong commercial chloride it is diluted with water to the required strength for use, while additions of it may be made to used liquors to refresh them and bring them up to strength. After the silk has been steeped the required length of time it is taken out, wrung out, all surplus liquor being returned to the bath. After this it is washed. This is important, as any tin chloride left in it will weaken the silk when it gets dry. The wash waters should be collected, and the tin they contain recovered by precipitation with soda or lime water.

During the washing with water the tin chloride is decomposed into tin oxide, which remains in the silk. The first action of the water is to form tin oxychloride, which, if allowed to remain in, will tender the silk, but it is removed by thorough washing.

After the washing the tinned silk is passed into a bath of phosphate of soda of 4 deg. Tw. This bath is used at 120 deg. F., and the silk is worked for half an hour, after which it is well washed.

These two operations may be several times repeated, according to the degree of weighting which is desired. They result in the formation of tin phosphate on the silk.

The next proceeding is to immerse the silk in a bath of sulphate of alumina of 9 deg. Tw., used at a hand heat, and the silk is treated for two hours, after which it is well washed.

The next operation is to put the silk in a bath of silicate of soda of 5 deg. Tw. strength for one hours at 100 deg. to 120 deg. Tw., after which it is wrung out and washed.

Some workers who weight fairly heavily modify this process as follows: 1st, tin chloride bath; 2nd, phosphate of soda bath; 3rd, alumina sulphate bath; 4th, silicate of soda bath; 5th, tin chloride bath; 6th, phosphate of soda bath; 7th, alumina sulphate bath; 8th, silicate of soda bath. By this process a weighting of 60 deg. to 80 deg. above the original weight of the silk can be got on organzine, and this is about the usual degree of weighting. Souple silks can be more heavily weighted. With these silks it is desirable to add a little sulphuric acid to the phosphate baths, and the others to use only slightly warm, as they have a stiffening action on the silk gum which is not always desirable.—Dyer and Calico Printer.

New Color Cards.

Diamine Fast Yellow M; Cassella Color Co., 182 Front St., New York.

One sample of cotton yarn and one of cotton piece goods showing 2 per cent. dyeings of Diamine Fast Yellow M.

Dyeings Fast to Washing and Milling; Cassella Color Co., 182 Front St., New York.

An elaborate folder showing 176 samples of cotton yarn dyed with the diamine colors for which full dyeing instructions are given.

Anthracene Chrome Blue F; Cassella Color Co., 182 Front St., New York.

This card has twelve samples showing one bath dyeings of Anthracene Chrome Blue F on raw wool, slubbing, woolen yarn and piece goods. Four of the samples were dyed on a chrome mordant.

Immedial Colors on Loose Cotton; Cassella Color Co., 182 Front St., New York City.

This is a sample case in which are placed 120 shades on loose cotton. Each shade is in a separate compartment and for all of them full dying directions are given. This case will undoubtedly prove of great value to every cotton dyer.

Sulfur Green G; Berlin Aniline Works, 213 Water St., New York City.

Two samples of cotton yarn showing 2 per cent. and 5 per cent. dyeings respectively with Sulfur Green G. Full dyeing directions are given.

Orange R O; Farbenfabriken of Elberfeld Co., 40 Stone St., New York.

A sample of woolen piece goods dyed with 3 per cent. Orange R O.

Brilliant Wool Blue G Extra; Farbenfabriken of Elberfeld Co., 40 Stone St., New York.

Two samples of woolen yarn and one of woolen piece goods dyed with different percentages of Brilliant Wool Blue G, for which full dyeing directions are given.

Rhodamine 4 G; Farbenfabriken of Elberfield Co., 40 Stone St., New York.

Two samples of cotton yarn dyed with Rhodamine 4 G and one of cotton piece goods printed with the same color.

DYE RECIPES.

The following recipes appear in the Dyers' Supplement, which is issued each month by the TEXTILE WORLD RECORD. The Supplement contains the colored samples, dyed according to recipes given. The selection of samples is carefully made, and it is the aim to show shades which are of especial interest to the dyer, and which the requirements of the market demand. The Dyers' Supplement is a 16-page pamphlet, in convenient form for preservation Subscription price for the Dyers' Supplement $1.00 per year

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Recipe No. 161.

Lemon Yellow on Cotton Yarn.

Benzo Yellow 5 G L on 100 lbs. cotton yarn. Prepare the dye bath with

½ lb. Benzo Yellow 5 G L.
(Farbenfabriken of Elberfeld Co., 40 Stone St., New York.)
2 lbs. Sodium Phosphate.
2 lbs. Soap.
5 lbs. Glauber's Salt.

Enter at 180° F. and dye at a boil for one hour.

Benzo Yellow 5 G L gives a bright yellow of remarkable clearness, and excellent fastness to light, and great tinctorial power.

Recipe No. 162.

Red on Woolen Yarn.

X L Red on 100 lbs. woolen yarn. Prepare the dye bath with

3 lbs. X L Red.
(Read Holliday & Sons, Ltd., 7 Platte St., New York.)
10 lbs. Glauber's Salt.
4 lbs. Sulphuric Acid.

Enter lukewarm, raise to a boil and continue 45 minutes.

This is a very easy leveling dyeing color.

Recipe No. 163.

Dark Brown on Worsted Yarn.

Compound Shade on 100 lbs. worsted yarn. Prepare the dye bath with

4 lbs. Domingo Alizarine Brown G.
1 lb. Domingo Chrome Green W.
(C. Bischoff & Co., 88 Park Pl., New York.)
4 lbs. Sulphuric Acid.
15 lbs. Glauber's Salt.

Enter at 180° F. bring to a boil and dye at a boil for one hour.

Then after treat at boil for one-half hour in a bath containing

2 lbs. Potassium Bichromate.

When the dye bath is completely exhausted the potassium bichromate is added directly to the dye bath, thus avoiding the use of a separate bath for after treating.

Domingo Alizarine Brown G and Domingo Chrome Green W when combined in this proportion and dyed as indicated, produce a very dark and pleasing shade of brown which possesses excellent fastness to light and washing.

Recipe No. 164.

Blue on Worsted Yarn.

Anthracyanine 3 F L on 100 lbs. worsted yarn. Prepare the dye bath with

4 lbs. Anthracyanine 3 F L.
(Farbenfabriken of Elberfeld Co., 40 Stone St., New York.)
10 lbs. Sodium Bisulphate.

Enter yarn at 180° F. and dye at a boil for one hour, or until dye bath is exhausted.

Anthracyanine 3 F L produces a very bright and greenish shade of blue, and is well adapted to the dyeing of peacock and saxony blues. It is very fast to light and also possesses good fastness to alkalies, acids, steaming and ironing. It does not stain cotton threads in woolen pieces, and is well adapted to the dyeing of ladies' dress material, carpet yarns and upholstery cloth.

Recipe No. 165.

Bright Green on Worsted Yarn.

Brilliant Carmine Green X on 100 lbs. worsted yarn. Prepare the dye bath with

1 lb. Brilliant Carmine Green X.
(Thomas Leyland & Co., 53 India St., Boston.)
15 lbs. Glauber's Salt.
2 lbs. Sulphuric Acid.

Enter at 140° F, bring to a boil and dye at a boiling temperature for one hour, or until the dye bath is exhausted.

Brilliant Carmine Green X dyes evenly and possesses good fastness to light and milling.

Recipe No. 166.

Orange on Cotton Yarn.

Flavophosphine G (Conc. New) on 100 lbs. cotton yarn.

First mordant the yarn with tannin by working for ¾ hour at 180° F. in a tannin bath made up with

2½ lbs. Tannic Acid,

and then allowing it to steep in the cooling bath for a few hours, or over night.

Then wring without rinsing and work for 15 to 20 minutes in a cold bath containing

1 lb. Tartar Emetic.

The yarn thus mordanted is then dyed in a bath containing

1 lb. Flavophosphine G (Conc. New)
(H. A. Metz & Co., 122 Hudson St., New York.)
2 lbs. Acetic Acid

at 150° F. for ¾ of an hour, and then washed and dried.

Flavophosphine G (Conc. New) gives a dyeing possessing good fastness to washing, milling and light, and on account of their level dyeing properties, they are serviceable for the production of combination shades with other colors. As the dyeing possesses excellent fastness to boiling acids, they are valuable for the production of two color effects upon cotton and wool union goods.

Recipe No. 167.

Brown on Worsted Yarn.

Brown B 948 on 100 lbs. worsted yarn. Prepare the dye bath with

3 lbs. Brown B 948.
(Berlin Aniline Works, 213, 215 Water St., New York.)
3 lbs. Sulphuric Acid.
10 lbs. Glauber's Salt.

Enter yarn at 140° F., bring to a boil and dye at a boil until the dye bath is exhausted.

Brown B 948 when dyed in this way gives a pleasing and fashionable shade of brown and possesses good fastness.

Recipe No. 168.

Green on Cotton Yarn.

Methylene Green B on 100 lbs. cotton yarn.

First mordant the yarn with tannin by working for ¾ of an hour at 180° F. in a tannin bath made up with

4 lbs. Tannic Acid,

and then allowing to steep in a cooling bath for a few hours or ever night. Then wring without rinsing and work for 15 to 20 minutes in a cold bath containing

2 lbs. of Tartar Emetic.

The yarn thus mordanted is then dyed in a bath containing

2 lbs. Methylene Green B
(Farbenfabriken of Elberfeld Co., 40 Stone St., New York.)

and

2 lbs. Acetic Acid

for ¾ of an hour at a temperature between 160° and 180° F.

Methylene Green B possesses very good fastness to light and washing, and is well adapted to printing cotton with the aid of tannic acid.

Recipe No. 169.

Bright Red on Worsted Yarn.

Coral Red X on 100 lbs. worsted yarn. Prepare the dye bath with

3 lbs. Coral Red X.
(Thomas Leyland & Co., 53 India St., Boston.)
2 lbs. Sulphuric Acid.
20 lbs. Glauber's Salt.

Enter yarn at 140° F., raise to a boil and dye at a boil for one hour, or until the dye bath is exhausted.

Coral Red X is a bright level dyeing scarlet suitable as a self color and in the production of mode shades. It is very fast to light and washing.

Recipe No. 170.

Indigo Blue on Cotton Yarn.

Tetrazo Indigo Blue G on 100 lbs. cotton yarn. Prepare the dye bath with

3 lbs. Tetrazo Indigo Blue G.
(American Dyewood Co., 156 William St., New York.)
30 lbs. Common Salt.

Enter yarn at 180° F. and dye at the boil for one hour.

Tetrazo Indigo Blue G gives a shade of blue resembling indigo blue closely. It possesses all the valuable properties of the direct cotton colors.

Recipe No. 171.

Dark Brown on Worsted Yarn.

Chrome Brown P Paste on 100 lbs. worsted yarn. Prepare the dye bath with

15 lbs. Chrome Brown P Paste.
(Sykes & Street, 85 Water St., New York)
2 lbs. Bichromate of Potash.
5 lbs. Acetic Acid.

Enter yarn at 180° F., give one or two turns, put on steam and dye at a boil until the bath is exhausted.

Chrome Brown P Paste is one of a new group of colors, dyeing level, and producing shades of excellent fastness. The feature of this group of colors is the application of the mordanting principle. (potassium bichromate) with the dye stuff in same bath at the same time. In some respects they are superior to chrome mordant and after chromed colors.

Recipe No. 172.

Reddish Orange on Cotton Yarn.

Tetrazo Chlorine Brown R on 100 lbs. cotton yarn. Prepare the dye bath with

3 lbs. Tetrazo Chlorine Brown R
(American Dyewood Co., 156 William St., New York.)
30 lbs. Common Salt.

Enter yarn at 180° F. and dye at a boil for one hour.

Tetrazo Chlorine Brown R gives a heavy shade of reddish orange and possesses the valuable properties of the direct cotton colors.

Recipe No. 173.

Black on Cotton Yarn.

Cross Dye Black R M on 100 lbs. cotton yarn. Prepare the dye bath with

10 lbs. Cross Dye Black R M.
(Read, Holliday & Sons, Ltd., 7 Platt St., New York.)
40 lbs. Crystalline Sulphite of Soda.
5 lbs. Sal. Soda.
60 lbs. Salt.

Enter the yarn just below boil, raise to boil, and continue forty-five minutes. Lift and wash well.

For the standing kettle use

5½ lbs. Cross Dye Black R M.
16 lbs. Crystalline Sulphite of Soda.
2 lbs. Sal. Soda.
10 lbs. Salt.

Recipe No. 174.

Brown on Cotton Yarn.

Tetrazo Sulphur Brown 3 R on 100 lbs. cotton yarn. Prepare the dye bath with

10 lbs. Tetrazo Sulphur Brown 3 R.
(American Dyewood Co., 156 William St., New York.)
30 lbs. Sodium Sulphide Crystals.
5 lbs. Soda Ash.
100 lbs. Common Salt.

Boil up the dye bath in order that the ingredients may be thoroughly dissolved, then enter yarn at 180° F. and dye just at the boil for one hour. The dye bath does not exhaust and if a standing bath is kept, the subsequent additions of color may be greatly reduced.

Tetrazo Sulphur Brown 3 R gives an excellent shade of reddish brown which possesses excellent fastness.

Recipe No. 175.

Yellow on Cotton Yarn.

Flavophosphine G G (Conc. New) on 100 lbs. cotton yarn.

First mordant the yarn with tannin by working for one-half to three-quarters of an hour in a solution made up with

1 to 2 lbs. of Tannic Acid,

at 160° F. and then allowing it to steep in the gradually cooling bath for several hours or over night. Then wring without rinsing and work for fifteen to twenty minutes in a cold bath made up with

1 lb. Tartar Emetic.

Wash and dye in a bath made up with

1 lb. Flavophosphine G G (Conc. New.)
(H. A. Metz & Co., 122 Hudson St., New York.)
2 lbs. Acetic Acid

for one hour at a temperature of 140° to 160° F.

Flavophosphine G G (Conc. New) gives a yellow which possesses excellent fastness to washing, milling and acids. It dyes level and is serviceable for the production of compound shades in combination with other basic colors. As it is fast to boiling acids it may be used for the production of two color effects upon cotton and wool material.

Recipe No. 176.

Tan Shade on Worsted Yarn.

Tan B 949 on 100 lbs. worsted yarn. Prepare the dye bath with

3 lbs. Tan B 949.
(Berlin Aniline Works, 213, 215 Water St., New York.)
3 lbs. Sulphuric Acid.
10 lbs. Glauber's Salt.

Enter yarn at 140° F., bring to the boil and dye at the boil until the dye bath is exhausted.

Tan B 949 gives a fashionable shade of tan brown and possesses good fastness.

Mill News.

COTTON.

New Mills.

*Alabama, Jacksonville. The Ide Cotton Mills will start operations about January 1st with 6,000 spindles, the additional 5,000 to be installed later. This company, which is capitalized at $200,000, will manufacture yarns.

*North Carolina, Asheville. The Elk Mountain Cotton Mill Co., recently reported incorporated with capital stock of $150,000, will occupy buildings of the Wm. Whittam Textile Co. They will start running January 1st, making damasks, etc., with 84 looms. Jas. A. Burroughs is president of the company; W. B. Northrup, treasurer; D. G. Devenish, agent, and T. A. Lacey, superintendent.

*North Carolina, Gastonia. The new company in which Geo. A. Gray has been recently reported as interested, has been incorporated as the Gray Manufacturing Co., with capital stock of $150,000. Geo. A. Gray is president and treasurer of the company, which will manufacture print cloths. Work will start in April on construction of the new mill, which they propose having in operation September, 1905, with 10,000 ring spindles and 350 looms, using steam power. Will take bids on machinery for making plain white sheetings, engines, boilers, etc.

*North Carolina, Greensboro. It is expected that the Etowah Mills will be ready to start production of goods in the spring of 1905. These mills, of which W. I. Young is president and treasurer, will make a special line of goods and will use largely mule spinning, operating about 8,000 mule spindles at start and 500 looms, also 250 looms on fine goods, "Dobby" work.

*North Carolina, Haw River. The Trolinwood Manufacturing Co., recently incorporated with capital stock of $125,000, contemplates starting up their new plant about Feb. 1st, making cottonades or pants materials. John A. Trolinger is president of the company, B. S. Robertson, treasurer. They will equip plant with 2,240 ring spindles and 125 looms and will install dye plant. Will use steam power. Goods will be sold through the Cone Export & Com. Co., New York.

*North Carolina, Selma. The Selma Cotton Mills will have their new plant of 5,280 ring spindles for making hosiery yarn, in operation by January 1st.

Pennsylvania, Clifton Heights. The Watts Manufacturing Company of Philadelphia has leased the old Lewis Paper Mills, formerly owned by the Thomas Kent Mfg. Co. and is installing necessary machinery for manufacturing upholstery goods of all descriptions. They are also erecting a new mill building to be used in addition.

*Pennsylvania, Lehighton. The new two-story and basement mill for the Lehighton Lace Co. is nearly ready for occupancy, and the machinery will be installed shortly. Plant will be run by steam.

*Pennsylvania, Philadelphia. Leasher & Rymer are busy installing the machinery in their new plant in the Dale Mill, 1729 Gillingham St., Frankford. They expect to start operations in about a month, making upholstery goods and damasks.

Pennsylvania, Wilkesbarre. The Sun Narrow Fabric Co., which discontinued business about two years ago on account of flood, has been succeeded by the Gibbs Manufacturing Co. They manufacture silk and cotton braids, tapes and bindings, operating 10 looms and 20 braiders, and bleach, dye and finish the goods. The new company is making additions to the machinery. H. Motterhead is the superintendent.

*Pennsylvania, Wilkesbarre. The Doran Lace Manufacturing Co., recently incorporated with $100,000 capital, to manufacture fine laces, has secured part of its equipment and is almost ready for operations. Ambrose West is president of the company; Wm. C. Sheppard, vice-president; George J. Stegmaier, treasurer, and John W. Doran, secretary and general manager. They have a number of orders on hand and when in full running order will have 200 looms, which will be run by electricity. They will bleach and finish the goods.

*Texas, Mabank. The new mill at this place, which will be under the same management as plant at Paris, under name of Electric Cotton Mills, will have an equipment of about 10,000 spindles. They will make novelty goods. It is expected that operations will be started in the spring.

*Texas, Paris. The new mills to be started here under name of Electric Cotton Mills (W. I. Young, Greensboro, N. C., interested), will manufacture cotton duck and will contain about 20,000 ring spindles. Plant will probably not be running before spring.

Enlargements and Improvements.

Connecticut, Moosup. The Cranska Thread Mill has been closed for a few weeks to allow work on addition being built to the plant.

Connecticut, Willimantic. Plans have been prepared for erection of a large addition to the Windham Manufacturing Company's plant. It will be used as a weave shed.

*Georgia, Columbus. The Muscogee Cotton Mills, new No. 4 plant, has been completed and work of installing machinery is under way. Operations will soon be started in same.

Georgia, Dublin. New looms are being installed in the Dublin Cotton Mills and they will have completed installation of 100 by latter part of month.

Georgia, Elberton. An addition is being built to the Swift Cotton Mills for purpose of increasing capacity of plant, now making finer quality of goods.

*Georgia, Griffin. The Rushton Cotton Mills have completed installing the new machinery about which recent mention was made. Plant is now equipped with 12,000 ring spindles and 380 looms.

Georgia, Newnan. The Newnan Cotton Mills are installing 7,000 additional spindles.

Massachusetts, Adams. An addition is being built to the dyehouse of the Renfrew Manufacturing Company's Broadley mill.

Massachusetts, Fall River. The Stafford Mills have installed 850 new looms equipped with long bobbins. They will have same in running order when strike is over.

Massachusetts, Fall River. The Merchants Mills are installing new engines. They will not have the work completed for two or three months, but if in the meantime it is decided to start operations, parts of the plant will be run alternately.

Massachusetts, Lawrence. Extensive improvements are being made to the Lawrence Duck Company's mill. The improvements include enlarging a four-story mill to five stories with flat roof, and will be extended 80 by 75 feet. New machinery will also be installed.

New York, Gouverneur. At meeting held recently by the directory of the Gouverneur Lace Mills, it was voted to increase the bond issue from $125,000 to $250,000, to provide additional working capital.

*North Carolina, Rhodhiss. It is stated that the Rhodhiss Manufacturing Company contemplates adding 15,000 spindles next year.

*North Carolina, Roxboro. Operations have been resumed in the Roxboro Cotton Mills, which have been closed during building of an addition, with day and night force. A large warehouse is now under construction.

*Pennsylvania, Bradford. Henry Leon reported building an addition to the plant, will install 7,500 new spindles in same. It is expected to have the addition in operation about December 15.

Pennsylvania, Philadelphia. Binder & Ellis, Allegheny avenue and C street, manufacturers of upholstery goods, contemplate installing 30 more looms, 72 inches, and 80 special looms, 40 inch reed space, for piece goods.

Pennsylvania, Philadelphia. The brick stack on the plant of Joseph Adamson & Co., is about to be repaired at a cost of $450. The company is very busy manufacturing tapes, webbings and bindings on 200 looms.

*Pennsylvania, Philadelphia. Messrs. Sibson & Stern, Inc., have removed to their new mill at Stenton and Wyoming Avenues.

*Pennsylvania, Wilkesbarre. A new storehouse, 50 by 120 feet, 3 stories high, brick, is under construction for the Wilkesbarre Lace Mfg. Co. The company now makes lace curtains, nets, etc., entirely, making its own yarns and purchasing some. They have an equipment of 5,000 spindles. The braid and tape departments have been discontinued, the machinery having been sold to other parties. A bleaching, finishing and dyeing department is attached. Geo. H. Smith is manager of the mill.

Rhode Island, Crompton. Plans have been prepared for a storehouse, 53 by 47 feet, three stories, to be erected by the Crompton Co.

Rhode Island, Providence. An addition, 22 by 50 feet, two stories, brick, is to be built to the Atlantic Mills.

South Carolina, Charleston. The Royal Bag & Yarn Manufacturing Co. has completed addition of dye plant in the mill for dyeing burlap red.

*South Carolina, Darlington. The Darlington Mfg. Co. has completed addition of machinery and now operates total of 53,000 spindles and 1,400 looms on prints, fancies, piques, etc.

*South Carolina, Lexington. At meeting held recently by the Lexington Manufacturing Company it was voted to build an addition to the plant and work has been started on foundations of same.

*South Carolina, Williamston. The Williamston Mills have increased their charter from $200,000 to $500,000, and paid-in capital from $200,000 to $300,000, as previously reported so to do. The equipment has been increased by additional machinery, from 14,336 spindles and 360 looms, to 25,984 and 600 respectively.

Mills Starting Up.

Alabama, Eufaula. Operations will soon be resumed in the Eufaula Cotton Mills, which have been closed all summer.

*Connecticut, Jewett City. The Ashland Cotton Co.'s mill will be started as soon as cotton can be obtained from the South.

*Georgia, Augusta. Operations have been resumed in the King Mill, which has been closed for purpose of making improvements.

*Georgia, Barnesville. Operations have been started in the Aldora Mills, formerly plant of the Barnesville Mfg. Co.

*Massachusetts, Chicopee. The Dwight Manufacturing Co. has started operating plant on regular schedule. They have been running but four days a week for several months.

*Massachusetts, Clinton. The Lancaster Mills have started operating the plant, including weaving, four days a week.

*Massachusetts, Holliston. The Holliston Braiding Company, capitalized at $50,000, with Aloise Maeder, president, and L. A. Gardner, treasurer, has started manufacturing all kinds of plain and fancy braids. They operate 265 braiders, using steam power and selling direct.

New York, Capron. Operations have been resumed in the Utica Cotton Company's plant, which has been closed for some time owing to cotton market.

New York, Elmira. The Call Manufacturing Co. has resumed operations after shut down of about five months. The company has enough orders to keep plant running for some time. Manufacture supers and interlinings on 60 looms and 4,000 spindles.

Pennsylvania, Trainer. The Trainer Spinning Mills will resume work next week after idleness of some months.

Texas, Sherman. Operations have been resumed in the Sherman Cotton Mills after shut down of several seasons.

Mills Shutting Down.

Massachusetts, Fitchburg. The Sun Mills Manufacturing Co. has discontinued operating the plant.

New Jersey, Mount Holly. The Mount Holly Hammock Factory has been closed by the offices of the concern until they can confer with their counsel, E. B. Budd. This action is taken on account of receipt of many claims for which the firm holds it is not responsible.

New York, Buffalo. The Buffalo Batting Mill has gone out of business.

Rhode Island. Pawtucket. The Alpine Textile Company's mill has been closed for an indefinite time.

Rhode Island, Woonsocket. The National Pile Fabric Company's mill has been closed for an indefinite period.

WOOLEN.

New Mills.

*Connecticut, Montville. The Monarch Woolen Mills have been incorporated with capital stock of $80,000 authorized, $42,000 paid in. The above is incorporation of parties operating the old Cochegan Woolen Mill.

*Massachusetts, Blackinton. The Blackinton Manufacturing Company has been incorporated with capital stock of $125,000. The incorporators are William Bianchi, Emil Kipper, Herman Behr and Manly A. Burnham, of New York. They will operate the plant recently reported purchased by Mr. Kipper and formerly run by Waterhouse & Buffum.

*Massachusetts, Saugus. Samuel H. Bailey is president of the Saugus Manufacturing Company, recently reported incorporated to operate the Pranker Mill, and Samuel H. Bailey, Jr., secretary and treasurer. They will make cotton and woolen goods and expect to have the plant running by first of January. The property is being remodeled and equipped. Charles W. Auel, superintendent at the Oneko Mill, New Bedford, will be general manager of the plant.

Massachusetts, West Millbury. Albert Kenshaw, of North Adams, has leased the Ramshorn Mill at this place and will start manufacturing worsted goods. The spinning room will be continued by Mr. Edwin Hoyle, who is doing work for the Mayo Woolen Co.

*New Jersey, Passaic. The new plant of the Forstman & Huffmann Company will be located at Acquackanock, N. J. This plant, which will be operated on high grade woolen and worsted goods for men's and women's wear, will be equipped with 125 broad looms, to be increased to 250. Company will sell goods direct from New York office, 817-819 Broadway.

New Jersey, Somerville. The Glen Rock Woolen Mills is new company recently organized with capital stock of $50,000 by James Brown, Jr., J. Edgar Griggs and Frederick L. Brown.

*Ohio, Ravenna. The Ravenna Worsted Co., capitalized at $50,000, will start operations about Jan. 1st, making 2/20 to 2/50 worsted yarns, using the Bradford system. G. H. Hodgson is president of the company; C. G. Bentley, treasurer. They will operate 5,000 spindles.

*Oregon, Bandon. The Bandon Woolen Mills, recently incorporated, have purchased the Rochester Woolen Mfg. Co.'s machinery, Rochester, Minn. The Rochester plant, which has been idle for some time, consisted of three sets cards, 14 looms and 35 sewing machines.

*Oregon, Portland. Work is well under way on the new plant for the Portland Woolen Mill, which contemplate being ready to start operations December 1st.

*Pennsylvania, Glen Riddle. James H. Billington is president of the Glen Riddle Manufacturing Co., recently incorporated with capital of $10,000 to operate plant here; Nicholas W. Steele, treasurer and general manager and Chas. J. Fox, secretary. They will manufacture wadding, batting, woolens, cassimeres and cheviots, and spin woolen yarns, operating 8 sets cards and 236 looms. Will also dye and bleach cotton yarns and raw stock. It is expected to have goods on the market in about two months.

Pennsylvania, Philadelphia. Gledhill & Keys is a new concern which is making preparations to start manufacture of rugs and carpets. The plant will be known as the Alva Mills and will be located on Oxford St., east of Paul St., Frankford.

Pennsylvania, Philadelphia. Charles P. Cochrane's new carpet mill, consisting of three buildings, three-story brick main mill and one-story engine and dyehouse, are almost completed and ready for the reception of the machinery. Mr. Cochrane is now located at Howard and Lehigh ave., where he is manufacturing velvet, tapestry and granite carpets on 80 looms. The new plant is located on Kensington Avenue a short distance below Frankford Creek.

Pennsylvania, Philadelphia. Mr. Hall, formerly with the Hall Yarn & Waste Mfg. Co., has entered into partnership with Walworth Sons and will operate a plant for spinning carpet yarns.

Pennsylvania, Wilkesbarre. The Goss Rug Carpet and Woolen Manufacturing Co., which started business recently in this city, is about to remove to Trucksville, a short distance from Wilkesbarre, where they have taken over the plant of M. & C. Williams, manufacturers of woolens, operating one set and four looms. The new company will have a total of seven looms on rugs, rag carpets and woolen yarns and will have a dye house attached. Mr. Goss, superintendent and general manager, states that they are doing a good business and hope to increase the working capacity of the mill as trade demands.

*Rhode Island, Greystone. Work is progressing on Jos. Benn & Sons' mill. The machinery for weaving will soon be in operation.

Enlargements and Improvements.

*California, Stockton. The Stockton Woolen Mills Co., newly organized to take over the plant of the old Stockton Woolen mills Co., contemplates making improvements to the plant.

Georgia, Rossville. The Park Woolen Mills are making improvements to the plant. The power plant is being overhauled and a new 300 h. p. engine installed. Several new spinning and carding machines will also be put in.

Indiana, Mishawaka. The Mishawaka Woolen Manufacturing Co. has recently completed installation of $30,000 worth of new machinery.

Maine, Dexter. Work is nearing completion on erection of an addition, one story, to the Wassookeag Woolen Company's plant. The new addition will be used for finishing room.

Maine, Dexter. Work will soon start on installation of a private electric light plant in the Dunbarton Woolen Company's mill. The dynamo will have capacity of 300 lights.

Maine, Waterville. The Riverview Worsted Mills are installing 12 new Knowles looms in the plant. This will give them a total of 72 in addition to 4 narrow looms.

Massachusetts, Globe Village. A brick addition is under construction for the Hamilton Woolen Company to be used for offices.

Massachusetts, Monson. The mill of Lancey Bros. at this place has been leased by Fred Faulkner of Stafford, Conn., who will start operations at once weaving cloth.

Massachusetts, Newton. Preparations are being made by the Saxony Worsted Mills for an addition 80 by 134 feet, brick.

Massachusetts, Uxbridge. The Royal Woolen Company is reported making preparations to install an electric lighting plant in the mill and will install a 25 h. p. engine and dynamo for supplying 250 lights.

*Michigan. Clare. William Wolsey, reported to remove plant to larger quarters, will also build a new boiler and engine room this fall and in the spring will erect a warehouse and packing room. Automatic machines will replace ordinary plain machines now used.

New Hampshire, Somersworth. The Queensbury Mills are installing 12 additional spinning frames and additional drawing machinery in the plant. This concern manufactures mohair and fancy worsted yarns.

New York, Amsterdam. Plans are being prepared for an addition, 66 by 65 feet, brick, three stories, to Shuttleworth Bros. Co.'s carpet mill.

New York, New Windsor. A large extension is to be built to the Hudson River Woolen Mills.

New York, Waterloo. The Waterloo Woolen Mills are having plans prepared for enlargement to the plant.

Ohio, Ashtabula. The Ashtabula Worsted Mills contemplate enlarging the plant and making some additions of machinery.

Ohio, Cleveland. A new three-story brick building is to be erected by the Collings-Taylor Co.

Ohio, Ravenna. The Cleveland Worsted Mills Co. proposes erecting a power plant here within the next few months and extending some of the buildings.

Pennsylvania, Darby. Verlenden Bros., manufacturers of cotton and woolen goods, are installing an additional set of cards in the plant.

Pennsylvania, Philadelphia. A one-story brick addition, 109 by 24 feet, will be built to Erben, Harding & Co.'s Tacony mill.

Pennsylvania, Philadelphia. John Bings, manufacturer of yarns and tapes at 2013 E. Arizona Street, whose establishment was recently damaged by fire, is working full time. The machinery has been renovated and put in working order. It is stated that a number of new tape looms are to be added to those already in operation. He is running 128 twisting spindles on carpet yarns and 24 braiders on tapes.

Pennsylvania, Philadelphia. Folwell Bros. & Co., 3rd and Cambria Sts., are about to have erected a new vitrified brick dye house, 64 by 58 feet. The contract has been awarded to William Steele & Sons, who will take sub-estimates on same until the 26th inst. Folwell Bros. & Co. are one of the largest manufacturers of men's and women's woolen and worsted goods in this city, operating 6,400 mule spindles, 8 sets, 318 narrow and 146 broad looms and worsted machinery consisting of 7 cards, 7 combs, 5 sets drawing, 10,080 spinning and 2720 twisting spindles. The goods are sold direct. Mitchell Stead is the superintendent.

*Rhode Island, Oakland. Contract has been let for erection of new building, about 200 feet long and three stories high for the Coronet Worsted Company.

*Rhode Island, Oakland. Work is being pushed on foundation for new building for the Oakland Worsted Co. It is expected to have the building ready for occupancy January 1. The basement will be used for dry finishing and shipping, and the other floor for weave room with equipment of about 82 looms.

Rhode Island, Woonsocket. The Montrose Woolen Co. is replacing 14 Crompton looms with new Knowles looms.

*Tennessee, Cleveland. The Cleveland Woolen Mills advise us that they are building an addition, 60 by 90 feet, two stories, which will be used for picker room and store-room for rags. In course of a month or so, they expect to begin foundation for erection of a two-story building, 60 by 290 feet, but will not work on building proper until early spring and by this time next year hope to have it completed and full equipped and when completed it will about double the present capacity. Company states that nothing will be done regarding machinery or any other supplies for some time.

*Vermont, Springfield. Work is nearly completed on the addition to the John C. Holmes Co.'s plant, which will double its capacity. The new addition, which is two stories and basement, will be used for beaming, twisting and winding departments. The dye and boiler houses have also been enlarged and a new 125 h. p. boiler installed.

Mills Starting Up.

*Massachusetts, Palmer. Operations have been resumed in Holden & Fuller's mill.

*Pennsylvania, Aston Mills. The May Manufacturing Company is putting the mill into full operation. They have installed electric lights throughout the plant and made several other improvements. Will put over 400 three-quarter looms in operation on cheap cotton goods and jeans. This plant has been closed down for a year during which time many of the employees have moved away and they are desirous of obtaining good help.

Mills Shutting Down.

Canada, Montreal. The Excelsior Woolen Mills have been closed and business relations discontinued owing to death of A. F. Gault, a former proprietor of the mill. It is stated that efforts are being made by the Gault estate to let building to a woolen manufacturer and if not successful will dismantle same.

Pennsylvania, Chambersburg. The Chambersburg Woolen Co. is shut down for the present. Owing to Mr. White's death, his interest in this property has been withdrawn, and Mr. Appenzellar is now the principal owner.

Pennsylvania, Downington. The Rockstone Mills Co.'s plant has been closed recently owing to strike.

Pennsylvania, Philadelphia. Clayton G. Rice, operating woolen yarn spinning plant, is disposing of the machinery, preparatory to retiring from business.

KNIT.

For Knitting Mill News, see Knitting Department.

SILK.

New Mills.

*Maryland, Hagerstown. Work is progressing on the new mill for the Hagerstown Silk Company. The building, which will be 50 by 150 feet and four stories high is expected to be completed about January 1, when machinery consisting of about 50 looms will be installed.

*New Jersey, Rockaway. The new mill reported to be established here will be branch mill of the Pelgram & Meyer Co.'s mill. Work has started installing the necessary machinery.

*Pennsylvania, Nanticoke. A. L. Storms & Co.'s new factor, which was started up in April, is now in partial operation. The balance of the machinery is in the mill and is expected to be put up and in operation in two months. They run 8,000 spindles, doing a commission business of throwing silk. W. J. Morgan is the superintendent.

Pennsylvania, Nanticoke. The foundations are now being laid for the new mill for the Nanticoke Silk Throwing Co. The building will be two stories high, of brick.

*Pennsylvania, Peckville. Operations have been started in the new silk mill established here by Valentine Bliss. Plant is equipped wih 5,000 spindles for throwing.

*Pennsylvania, Scranton. H. Renard & Co., Taylor, Pa., will remove their plant to this city as soon as new building is built. It is expected to have same ready for machinery about Aug. 1. Company now operate their plant night and day.

*Pennsylvania, Wilkesbarre. The Wilkesbarre Embroidery Co. is one of the new plants recently started up in this city for the manufacture of fine laces and embroideries, on four machines, which they bleach and finish, the plant being run by steam. The company has a capital of $22,500 and the following officers: President, Fred J. Wegmaier; vice-president, Luke French; secretary and treasurer, Maurice Gaertner, and Ernest Strubi, manager and superintendent. The plant occupies a new one-story building of brick on Hake's lane. They use cotton and silk yarns. The goods are sold direct.

Enlargements and Improvements.

*Massachusetts, New Bedford. The Meadville Silk Manufacturing Co., Johnson Barbour, proprietor, is installing a few looms here and if the people take well to the work it is the company's intention to keep adding to and make it a reasonably large silk plant.

New Jersey, Burlington. The Burlington Silk Weaving Mills contemplate enlarging the plant by an addition, 120 by 150 feet.

New York, Binghamton. The Binghamton Silk Co.'s mill has been purchased by Thomas S. Napier of New York. The plant will be conducted on new lines on a broader scale and the force of operatives largely increased. Sidney Smith will continue as superintendent.

Pennsylvania, Bath. The Bath Silk Manufacturing Co. has increased its capital to $25,000 and elected a new set of officers as follows: President, C. J. Davis; vice-president and superintendent, W. G. Gordon; treasurer, alex Cruickshank and secretary, D. H. Keech. Twenty more looms have been added, making a total of 70 which are run on tie and dress silks, sold direct and through agents.

Pennsylvania, Mauch Chunk. The Mauch Chunk Silk Co., Ltd., has recently completed renovating the mill. They do commission throwing, operating 1,952 silk and 2,608 twisting spindles, using electricity. John Kidd is superintendent of the plant.

Pennsylvania, Plymouth. 1,500 new spindles have been added to the throwing plant of M. J. Atwood, making the number now in operation 11,500 in all. The factory is running full time. Lewis Atwood is the superintendent.

Pennsylvania, Pottstown. The Champion Silk Mills, manufacturers of sewing and spool silks, trams, organzine, floss, etc., in order to facilitate the dyeing of their goods, have added a water softening plant to their dyehouse with a capacity of 100,000 gallons daily, the apparatus being supplied by the Philadelphia (Pa.) Water Purification Co.

Pennsylvania, Scranton. Two thousand new spindles have been installed in W. H. Ashley's mill, giving a total of 12,000 in all. Fred J. Lees has charge of the plant, which is running full time.

Pennsylvania, Scranton. The Alfred Harvey Silk Co.'s plant is being enlarged for purpose of making room for additional machinery.

Pennsylvania, Scranton. The Paul Clemens Silk Mfg. Co. is very busy operating 100 looms on broad, tie and lining silks, which are sold through New York. A new 30 foot addition, 2 stories, is being built to the present building and in which they will install 80 new looms.

Pennsylvania, South Bethlehem. In addition to their main factory and a branch factory at Coplay, Pa., the Lehigh Valley Silk Mills have opened up and have now in operation another branch mill which they are using for throwing, with J. Cardiff in charge as superintendent. It is located in So. Bethlehem and is known as the Lloyd mill. This company is doing a good business, all its mills being in full operation.

Mills Starting Up.

Rhode Island, Westerly. Operations have been resumed in the Westerly Silk Mill, which has been closed of late.

Mills Shutting Down.

New York, Rochester. The Rochester Textile Works, manufacturing coach laces, broids, bindings, etc., have gone out of business.

New York, Rochester. The Rochester Silk Facing Works has discontinued business.

MISCELLANEOUS.

New Mills.

*Mississippi, Columbus. The Mansfield-Hill Cordage Manufacturing Co., capitalized at $30,000, contemplates starting operations about January 1st.

Pennsylvania, Philadelphia. The Palruba Manufacturing Company has been incorporated recently with capital stock of $100,000, by F. A. Sheck, Eugene Goodman, P. J. Luth and R. G. Powers. They will manufacture printed burlap and dyed burlap carpets and rugs. Plant is located at 1710 North Front street.

Pennsylvania, South Bethlehem. A plant for the dyeing of fast black on hosiery has been started up here by Messrs. Loesher & Fickert.

Rhode Island, Riverpoint. The Continental Finishing Co. has purchased the Colvin Machine Shop at Birch Hill and will remodel same.

*Rhode Island, Riverpoint. The Continental Finishing Company, recently reported having purchased the Colvin shop, is capitalized at $100,000. L. D. Pierce is president and treasurer of the company and E. L. Stewart superintendent. They will finish cotton goods, and expect to be in operation about December 1.

*Washington, Seattle. The new mill under construction for the Portland Cordage Co. is a branch of the main plant at Portland, Ore. They will make manila and sisal cordage, operating 76 spindles.

Enlargements and Improvements.

Illinois, Chicago. A new one and two-story brick dyehouse is to be built for the Manhattan Dye Co., 1406-8 West Lake Street.

Massachusetts, Millbury. As soon as plans are perfected, contracts will be let for enlarging the West End Thread Co.'s plant, two-thirds the present size. The machinery, which has been purchased abroad, will be installed as soon as the building is completed.

New York, Newburgh. The Newburgh Bleachery having made very extensive improvements to their establishment in the way of fire protection devices, etc., have also put in a 4,000,000 gallon gravity filter of the Hungerford-Elfreth pattern, supplied by the Philadelphia (Pa.) Water Purification Co., for the purpose of purifying the water used for bleaching, which they obtain from a lake on the grounds. This concern bleaches and finishes fine cotton fabrics, using both steam and water as a motive power.

Pennsylvania, Allentown. Pickup & Kean, dyers of cotton yarns, contemplate erecting a new one story brick building to be occupied by them in place of the frame building where they are now located. New machinery will be installed for dyeing. The present capacity of the plant, 1,000 pounds per day, will be greatly increased.

Pennsylvania, Philadelphia. The Nicetown Dye Works, which started operations quite recently at Eighteenth and Bristol Streets, dyeing fast black hosiery yarns, are erecting a new building where they will have better facilities on C Street, above Allegheny Avenue. The new plant, which is expected to be completed about November 1st, will have capacity of 5,000 lbs. a day.

FAILURES AND SUSPENSIONS.

Massachusetts, Quincy. The Cambridge Knitting Mills have been petitioned into involuntary bankruptcy at instance of three creditors.

*New Hampshire, Laconia. A petition in bankruptcy has been filed against the Laconia Woolen Company, which has been making efforts to effect a settlement with the creditors.

New York, Frankfort. Peter McEvoy has been appointed receiver of the Mohawk Valley Woolen Co., in compliance with petition made by John C. Manion. The voluntary dissolution of the company was also asked on the ground that it is insolvent. Charles D. Thomas, of Herkimer, was appointed referee and a hearing will be held January 16th.

South Carolina, Lolo. The Valley Falls Manufacturing Company has been placed in the hands of a receiver, viz. G. L. Wilson, cashier of the Spartanburg Central National Bank. The application for receivership was made by the company.

Virginia, Petersburg. A petition in voluntary bankruptcy has been filed by the creditors of A. S. & S. A. Reinarch, operating as the Petersburg Hosiery Company. Although a statement of the affairs has not yet been filed it is thought that the liabilities will amount to $25,000 and assets $15,000.

FIRES.

Maine, North Vassalboro. The dye house owned by Herbert Pease and operated in connection with the shoddy plant, has been destroyed by fire, with all contents. There was no insurance

on the plant. It is stated that the plant will not be rebuilt until next spring, when a fireproof structure will be erected.

Massachusetts, South Royalston. Fire, which started in the picker house of the Geo. E. Whitney Woolen Mills destroyed that plant, also Mechanics' Hall and Congregational Church.

New Jersey, Camden. The Camden Wool Stock Company's mill has been destroyed by fire. The loss is placed at $50,000, partially covered by insurance.

New Jersey, Camden. The Fries-Breslin Company's mill, Ferry Ave., below Atlantic Ave., has been destroyed by fire. The loss is estimated at $350,000; insurance $300,000.

New Jersey, Keyport. The E. J. Currie thread mill has been destroyed by fire. Loss is estimated at about $12,000.

Pennsylvania, Georgetown. The Georgetown Hosiery Mill has been destroyed by fire. The loss is placed at $7,000.

FACTS AND GOSSIP.

Arkansas, Dardanelle. The Dardanelle Cotton Mills have been sold to New York and Texas capitalists. It is reported that the new proprietors have made arrangements for installing considerable new and up-to-date machinery in the plant.

Connecticut, Middletown. Frank M. Ashley of New York has purchased the old Doebler factory at the Farms and will equip same with machinery for manufacturing carpet linings and a covering greatly resembling matting. About 25 people will be employed at first.

Connecticut, Southington. The Union Bag & Paper Company's plant, which has been vacant for some time, has been purchased by a company organized under Maine laws, for manufacturing linen. Company will be re-organized and New Haven and Southington men will become interested. Capital stock will be placed at $2,000,000. It is thought that P. J. Corbett, president of the Elm City Manufacturing Company, will be at the head of the new company.

The W. A. Slater Mills, Jewett City, Conn., are increasing their system of humidifiers recently installed by the American Moistening Company, Boston.

*Georgia, Augusta. The plant in which Walter M. Jackson was recently reported as interested, refers to the Davis Cotton Mills, which have been projected for some time with Chas. Warren Davis. They will have capital stock of $500,000; Mr. Davis, president, and Mr. Jackson, treasurer. Print cloths will be made in plant, which will have equipment of 25,000 spindles and about 700 looms.

*Maine, Camden. At meeting held recently by the creditors of the Megunticook Woolen Co., Joseph E. Moore, of Thomaston, was elected trustee.

The Goodall Worsted Mills, Sanford, Me., have adopted the American Moistening Company's system of humidification.

Maine, Waterville. W. H. K. Abbott has been appointed general manager of the Lockwood Mills, to succeed his father, the late S. I. Abbott.

The American Moistening Company, Boston, is completing the entire equipment of the Dan River Mills (Danville, Va.), with their system of humidifiers.

*Massachusetts, Clinton. It is rumored that the Clinton Worsted Company's plant will soon be restarted with William Rodger of the old company in charge.

*Massachusetts, Franklin. The Worcester Textile Co.'s plant was bid in at recent sale by Worcester parties formerly interested in the concern. The plant will soon be put in operation again making toweling as heretofore.

The Massachusetts Mills, Lowell, Mass., have placed a repeat order for humidifiers with the American Moistening Company, Boston, Mass.

*Massachusetts, Lowell. Repairs have been made to building recently damaged by fire at the Waterhead Mills and plant is running.

Massachusetts, Millbury. The Holbrook Manufacturing Company has filed a petition for dissolution of the corporation. The company was organized with capital stock of $30,000, to manufacture yarns and fabrics. It was voted later to increase to $100,000, but this was never paid in and at meeting held in August it was voted to petition for dissolution, business having been suspended. Those interested in the company are Francis F. Rice, Edward F. Rice and Fred W. Moore.

The Wauregan Company, Wauregan, Conn., has adopted the American Moistening Company's system of humidifiers.

*New Jersey, Somerville. The Somerville Woolen Mills were not sold October 6th, there being but one bid offered ($75,000). It is not yet known what further action will be taken regarding the plant.

New York, Amsterdam. A. V. Morris & Sons, manufacturers of underwear, will sell their product direct to the jobbing trade during the coming season.

New York, Buffalo. The Duffy Silk Mill Co. operates a plant of 12,000 spindles, throwing silk and using electricity. Mr. Chas. Emo is superintendent of the plant. This company also operates plants at Fort Plain and Phoenix, N. Y., all of which are running full time. Have a total of 50,000 spindles in the three mills.

New York, Jamestown. Louis Krempin, proprietor of the Southside Woolen Mills, destroyed by fire, advise us that he will not rebuild the plant.

*New York, Little Falls. The mill property of the Titus Sheard Company, known as the Eagle Mills, was sold at auction recently to Atty. M. G. Bronner, representing the mortgagees for $37,000. Although nothing definite has been decided regarding disposition of plant, a report states that the plant will in all probability be started up shortly. David H. Burrell and Charles A. Miller, with Mr. Bronner, are the mortgagees.

*New York, Rochester. The Flower City Dye Works, now owned and operated by Andrew Bryson, is extremely busy dyeing, bleaching and mercerizing cotton and worsted yarns in the skein. The capacity of the plant is 5,000 pounds a day.

*New York, Schenectady. The Charles Mahony & Co., Inc., will start about November 1st on construction of new building for making yarns, which they propose starting in about three months.

North Carolina, Charlotte. It is reported that Samuel Lea & Sons, Philadelphia, propose removing their finishing plant to this place. The plant will be enlarged and machinery for dyeing, printing and bleaching will be installed.

*North Carolina, Coleridge. The Enterprise Manufacturing Company's plant has been purchased, at receiver's sale, by R. L. Caviness. It is stated that the new owner will make some renovations and put mill in operation.

North Carolina, Fayetteville. W. D. McNeill, superintendent of the Aragon Mills (Ga.) is reported as making preparations for erection of the Coleman Cotton Mill, on site purchased near this place. The new plant is to be equipped with 25,000 spindles.

The White Oak Cotton Mills, Greensboro, N. C., are equipping their entire plant with the American Moistening Company's system of humidifiers, requiring about 300 humidifiers.

North Carolina, Raleigh. The Lincoln Cotton Mill Co. has been incorporated under New Jersey laws with capital stock of $125,000. Edward A. Johnson (Raleigh) and John L. White and G. V. Kelly (Jersey City) are the incorporators.

Ohio, Cleveland. The Ontario Manufacturing Company has been incorporated with capital stock of $50,000 for manufacturing cotton and worsted yarns and cloth. A. H. Wyatt, M. A. Mapes and Geo. E. Feller are among those interested.

Ohio, Toledo. It is reported that the Chamber of Commerce, C. E. B. Lamson, president, is negotiating with Woodhouse, Bopp & Co., of New York City relative to removing their city plant to this place.

The Adelaide Silk Mills, Allentown, Pa., have adopted the American Moistening Company's system of humidifiers.

*Pennsylvania, Kutztown. The proposition made regarding the Kutztown Silk Mill has been accepted by the York Silk Mill and work will now proceed on installing weaving machinery.

Pennsylvania, East Mauch Chunk. A. Teste is superintendent of D. G. Dery's mill, which is running full on broad silks, operating 400 looms.

Pennsylvania, Philadelphia. The Manningham Worsted Company, Haines Street, near Stenton Avenue, Germantown, manufacturers of worsted yarns with 4 cards, 3 combs and 3,500 spindles are very busy. The mill is being run day and night to keep up with orders on hand.

Pennsylvania, Philadelphia. Morris A. Janney has been elected trustee of Joseph R. Foster & Sons, dyers and finishers.

Pennsylvania, Scranton. The Scranton Yarn Finishing Co., mercerizers and coners of yarn, are doing fine business. J. H. Millhouse has succeeded Thos. Russell as general manager. Plant has capacity of 1,000 pounds per day; also dye and bleach.

Pennsylvania, Slatington. It is reported that the plant of the Slatington Textile Co. will be put in operation again. One of the members of the old company is negotiating with parties to that end.

The Merion Worsted Mills, West Conshohocken, Pa., have placed a repeat order for humidifiers with the American Moistening Company, Boston.

Pennsylvania, Weatherly. The Read & Lovatt Co. has dispensed with the manufacture of broad silks and now only throw on commission, operating 42,000 spindles. W. B. Lovatt is superintendent and buyer of the Weatherly plant.

Pennsylvania, Wilkesbarre. The Empire Silk Mills, Bamford Bros., proprietors, are running on full time making ribbons. Robert Speirs is superintendent of the plant.

Quebec, Valleyfield. The Monarch Bleach, Dye and Finishing Co. has been incorporated under Massachusetts laws with capital stock of $50,000. Edwin W. Cole is president of the company and Chester F. Hill, treasurer.

Rhode Island, Thornton. The Pocasset Worsted Co. have removed offices at the Banigan Building, Providence, to 100 Boylston Street, Boston.

*Rhode Island, Valley Falls. The Cumberland Mills property has been purchased by James Orr, of South Attleboro, Mass. It is not yet known just what will be done with the plant.

*South Carolina, Camden. The De Kalb Cotton Mills were not sold on the 12th inst., owing to fact of no bids being made for the plant. The mills are now in the hands of a receiver and further orders from the court will be awaited.

*South Carolina, Edgefield. We have been advised by E. C. Smith that upon investigating the matter regarding establishment of plant for manufacturing towels, has decided to abandon the idea. He will, however, start work in about 60 days on new building for a hosiery plant at Williston, S. C.

Tennessee, Irwin. The Irwin Leatherman Cotton Co. has been incorporated with capital stock of $25,000. R. C. Irwin, S. R. Leatherman and J. H. Smith are among the incorporators.

Tennessee, Jefferson City. W. B. Lockett & Co. have purchased the plant of the Jefferson City Woolen Mills and will continue operating the plant. Mr. E. Jefferson will be president of the company.

Texas, Chico. Ed. A. Dickinson is reported as interested in a new company with capital of $250,000 for purpose of erecting a cotton mill.

Texas, Corsicana. The Corsicana Cotton Mills have been incorporated with capital stock of $100,000 to take over the plant of the Corsicana Cotton Mill. A. G. Elliott, W. E. Matchett and Oliver Peters are the incorporators.

Personals.

Cotton.

J. L. Davis, formerly superintendent of the Dallas Mfg. Co., Huntsville, Ala., is now superintendent of the Madison Manufacturing Company, same city.

John C. Judge, Jr., overseer of washing, spooling and warping at the No. 3 mill of the Union Cotton Mfg. Co., Fall River, Mass., has been made superintendent of the entire plant, to succeed John Sullivan, resigned.

J. M. Arthur, from the Glenwood Mills at Easley, S. C., has accepted the position of overseer of the cloth room at the Drayton Mill, Spartanburg, S. C.

F. L. Emery, superintendent of the Odell Mfg. Co., Concord, N. C., has resigned.

James A. Greer, carder in the mill of the Merrimack Mfg. Co., Huntsville, has resigned, to accept the superintendency of the Broadus Cotton Mills at Stevenson, Ala.

Robert Jackson, overseer of spinning for the Henderson Cotton Mills, Henderson, Ky., has resigned.

William Kerwin, formerly superintendent of the yarn department of the Atlantic Mills, Providence, R. I., has been engaged as superintendent of the Beacon Mills, New Bedford, Mass.

E. A. Chase, at a meeting of the Board of Directors of the Seaconnet Mills, Fall River, Mass., tendered his resignation as treasurer. The resignation was accepted, and Milton Reed was appointed acting treasurer.

Charles W. Perkins, superintendent of the Ballou Mills, Ballouville, Conn., has been transferred to the Totokett Mills, Norwich, Conn.

J. W. Thompson, overseer of weaving and dyeing at the Tupelo (Miss.) Cotton Mills, has resigned and become secretary and assistant manager of the Tipton Cotton Mills at Covington, Tenn.

Charles Prew, late of Fall River, has accepted the position of overseer of carding for the Hamilton Cotton Co., Hamilton, Ontario.

Edward Higginbottom, who has been overseer in the cloth room of the Samoset Company, Valley Falls, R. I., has accepted a position in the Merchant Mills of Montreal, Can. His place in the cloth room at the Samoset Mills is taken by Allan Campbell, who had charge of the room previous to the appointment of Mr. Higginbottom.

John W. Pead, agent of the Merrimack Mfg. Co., Lowell, Mass., has tendered his resignation. Mr. Pead entered the employ of the Merrimack Company at the age of ten years, and has been with the company ever since. He is to still make Lowell his place of residence, and will make a trip to Florida this winter.

Jude C. Wadleigh has been appointed agent of the Merrimac Mills, Lowell, Mass., to succeed John W. Pead. Mr. Wadleigh has been superintendent of the Massachusetts Cotton Mills in Lowell for the past twelve years. He received his training in the latter mills, where he began work as office boy.

Orville C. Wilson, overseer of the weaving department in Mill No. 7 of the Dwight Mfg. Co., Chicopee, Mass., has severed his connection with that company.

E. T. Radford, for the past two years superintendent of the Estelle Cotton Mill, Selma, Ala., has left for Stonewall to accept a similar position.

Percy L. Clay has resigned as general manager of the Buell Manufacturing Co., St. Joseph, Mo., and has accepted a similar position with the Marysville (Cal.) Woolen Mills.

The following changes in the departments of the New England Cotton Yarn Company have gone into effect. Thomas F. Glennon, who until recently was superintendent of the New Bedford Spinning Company, has been appointed general superintendent of the New Bedford department, which includes the Bennett, the New Bedford Spinning and the Rotch Mills. George H. Briggs, who has been superintendent of the Rotch Mills, has been transferred to Taunton, and been appointed general superintendent of the Taunton department, including the Cohannet and the Nemasket Mills. C. R. Danielson, formerly of the Sanford Spinning Company of Fall River, has assumed control of the Fall River Mills, including the Globe and the Sanford. A. J. Currier, who has been general superintendent of the Fall River department, has resigned.

George E. Dexter, late overseer of spinning at the Lorraine Mfg. Co., Westerly, R. I., is now with the Dartmouth Manufacturing Co., New Bedford, Mass.

P. M. Grimes, formerly superintendent of the York Cotton Mills, Yorkville, S. C., has been appointed superintendent of the Atherton Mills, Charlotte, N. C.

Richard Boardman is now overseer of weaving at the King Philip Mill No. 4, Fall River, Mass., succeeding the late William Sharples.

C. M. Dunn, formerly assistant superintendent of the Avon Mills at Gastonia, N. C., has been promoted to the position of superintendent.

John Ramsden has resigned as overseer of spinning in Wamsutta Mills, Nos. 4 and 5, New Bedford, Mass.

J. W. Graham is the successor of Lewis Dexter, Jr., manager of the St. Croix Cotton Mill of the Canadian Colored Cotton Mills Company, Milltown, N. B.

William Grove, overseer of spinning at the Bernon Mills, Georgiaville, R. I., is now with the Manchaug (Mass.) Company.

Frank Bills, of Lonsdale, R. I., has been engaged as overseer of carding at the Saunders Cotton Mills, Saundersville, Mass.

Col. J. G. Wardlaw, secretary and treasurer of the Gaffney (S. C.) Mfg. Co., has resigned, and W. M. Webster is his successor.

H. G. Smith has been promoted from overseer of weaving to superintendent of the Aragon (Ga.) Mills.

A. C. Canterbury has accepted the superintendency of the Winona Cotton Mills at Winona, Mass. He was formerly overseer of carding and spinning in Tupelo, Miss.

S. M. Buchanan, recently of Starkville, Miss., has taken the position of overseer of carding and spinning at Tupelo, Miss.

Richard H. Fish, formerly of Galveston, Texas, has accepted a position as secondhand on lenos and fancies in the Acushnet Mills, New Bedford, Mass.

John C. Judge, Jr., overseer of the slashing, spooling and warping departments of the Union Mills, No. 3, Fall River, Mass., has been made superintendent of the entire plant to succeed John Sullivan, resigned.

Woolen.

W. R. Smith, designer for the Lippitt Woolen Company, Woonsocket, R. I., for the past twelve years, has resigned to accept the position of assistant superintendent and designer at the Rhode Island Worsted Company's plant at Indian Orchard, Mass.

William Murray, formerly at the Globe Mill, Utica, is now overseer of drawing, spinning and twisting at the Peacedale (R. I.) Manufacturing Co.

Victor P. Thewlis of Utica, N. Y., has been appointed superintendent of the Oneko Mills, New Bedford, Mass.

William Naismith has been engaged as superintendent for the Scotia Worsted Mills, Woonsocket, R. I. He was formerly of England, and was associated at one time with Hall & Co., Jamestown, N. Y.

J. F. Brallier, superintendent of the Dews' Woolen Company, Guilford, Me., has resigned.

C. C. Harris of Ashaway, R. I., has been engaged as overseer of spinning by the Hanover Woolen Mfg. Co., Hanover, Ill. Frank Laduke is engineer for the company.

Louis Etchells, of Chester, Pa., has been appointed designer at the woolen mills of Edward T. Steel & Co., Bristol, Pa.

George W. Davis, for a number of years second dyer at the Washington Mills, Lawrence, Mass., and of late with the Gilbert Mfg. Co. at Ware, Mass., is now dyer at the Tremont Worsted Co., Methuen, Mass.

Arthur Wilson, overseer of twisting at the Bristol (Pa.) Worsted Mills, has resigned.

Allan Haigh has been appointed manager of the Eureka (N. S.) Woolen Manufacturing Company. He was formerly of Oxford, N. S.

John Allen is agent of the Assabet Mills of the American Woolen Company, Maynard, Mass., succeeding C. J. Bodfish. The latter is now located in the Boston office of the company. Mr. Allen comes from Collinsville. His boss spinner, Mr. Baxter, goes with him to Maynard, Mass., as overseer of the spinning department.

Miscellaneous.

Ernest Hall, formerly superintendent at North Abington, is now engaged with the dry good commission house of Eldredge, Lewis & Co. of Boston.

Mr. M. C. Miller, one of the leading men in the alternating current department of the Westinghouse Electric & Mfg. Co., Pittsburg, Pa., has resigned his position with that company to accept a similar position with the Allis-Chalmers Company in their electrical department.

Mr. Chas. S. Buell, mechanical engineer, who until recently represented the Westinghouse Machine Company in Chicago, has entered the employ of the Allis-Chalmers Company as salesman and engineer in their power department.

William Cowles has resigned as overseer of the colored drying room of the Clyde Printing & Bleach Works, River Point, R. I.

Mr. John F. Burke, for a number of years with the Westinghouse Electric & Mfg. Co., in Omaha, Neb., has joined the selling force of the Allis-Chalmers Company with headquarters in Omaha, Neb., and will engage in the sale of Corliss engines, electrical apparatus, and crushing and cement machinery for the latter concern.

Mr. Wilbur M. Ruth, an engineer of wide experience in both steam and electrical work and until recently assistant to the president of the Mesta Machine Company, Pittsburg, Pa., and previously employed on the engineering staff of the E. P. Allis Company, has accepted a position as salesman and engineer for the Allis-Chalmers Company at their Pittsburg office.

Robert Cochran, dyer, Norwich, Conn., is now located with the Bondsville Bleach & Dye Works, Bondsville, Mass.

James H. Barlow, overseer of the weaving department of the Stevens Mill, has been engaged as evening instructor at the Bradford-Durfee Textile School, Fall River, Mass.

Deaths.

G. Ellison, proprietor of the Ellison Mills, Frankford, Philadelphia, Pa., died suddenly on board the steamer Baltic the day before that vessel reached New York. He was on his way to this country to inspect his Frankford mill, which he had not yet seen.

Robert M. McArthur, superintendent of the Burlington Mill, Winooski, Vt., died at his home in that city October 2, after less than a week's illness with pneumonia. Four children besides his wife survive him.

Francis Brown Capron died at his home in Baltimore, Md. After graduating from Brown University he went to Baltimore and settled at Lurel, Md., with General Horace Capron, where they owned extensive cotton mills, at the same time having interest with his cousin O. C. Tiffany of Baltimore.

Isaac Adler, proprietor of the Fairmount Woolen Mills, Cincinnati, O., died recently. Mr. Adler was 69 years old, and was born in Germany. He came to this country when 17, and had been a resident of the above city for almost half a century.

Joseph S. Tidd, principal owner and treasurer of the Oakland Mills, Taunton, Mass., died in that city October 5th, at the age of 61. He was born in Warren, Mass., but came to Taunton early in life, and has been identified with municipal affairs. He was a member of the board of aldermen two years, the city council two years and the school committee nine years.

Henry B. Metcalf died October 8th in his 76th year in Pawtucket, R. I. The deceased was born in Boston in 1829. He was prominent in political and philanthropic work, as well as in manufacturing enterprises. He assisted in organizing the Boston Button Company, of which he was the senior partner, and over 30 years ago was called to the commercial management of the Pawtucket Hair Cloth Company, whose business was then depressed and under him the business became prosperous. For 24 years he had been a member of the board of trustees of Tufts College and for two years he served as president of the college corporation.

Julius Freghan, one of Louisiana's wealthiest citizens, died from the effects of an apoplectic stroke in New Orleans recently. He was president of the Lane Cotton Mills and also a member of the Cotton Exchange.

Arthur Fieldhouse, Sr., manager of the Hamilton Woolen Mills, Louisville, Ky., died recently.

Luther W. Faulkner, one of the oldest residents and a prominent man in the business affairs for many years of Billerica, Mass., died October 8th. He was born in this city in 1815. In the year 1840 with his father the deceased established the business of making flannels, which was continued for ten years, when he removed to Fisherville, N. H., and was a member of the firm of Harris & Faulkner in the manufacture of woolen goods for another ten years. In 1860 he began business as Luther W. Faulkner & Sons in Lowell, making fancy woolens. This was sold in 1898 to the American Woolen Company. Mr. Faulkner, although retired from business the last few years, has taken a lively interest in general affairs.

Thomas W. Olney, manager and agent of the George W. Olney Woolen Co at Cherry Valley, Mass., and manager of the Buffumville Mfg. Co. at Oxford, died in Worceter, Mass., October 21. He was one of the most popular and prominent men that ever graduated from Phillips Academy at Andover. After leaving the academy he entered the mill business with his father in Cherry Valley, and after a few years there went to Lisbon, Me., where he was manager of the Farnsworth Company's mill for a number of years. At the death of his father in 1894 he returned to Cherry Valley, and has been and always will be remembered as one of the kindest and best hearted employers on the Kettle Brook stream.

George W. Cumnock, for nearly 20 years superintendent of the Social and Nourse Mills, Woonsocket, R. I., died October 10. He was 49 years of age. The deceased was born in Mason, N. H. About five years ago he was compelled to give up work on account of ill health. He was one of Woonsocket's most prominent citizens and held in high esteem.

Otis R. Barker, a retired woolen manufacturer, of Pittsfield, Mass., age 93 years, was instantly killed on the 18th by being thrown from a wagon. He was formerly associated with his brothers in manufacturing at Barkerville, Mass.

James W. Platt, a textile machinery expert, died recenty at his home in Germantown, Philadelphia. He was born in England in 1834, and after learning the textile machinery business he erected and superintended machinery in various parts of England, France, Germany and Russia. He came to this country in 1879 to introduce the French system of worsted yarn spinning.

William M. Cavanagh, a manufacturer of cotton hosiery, Birdsboro, Pa., died recently.

Samuel Sabel, senior member of the firm of M. Sabel & Sons, wool merchants, and president and chief stockholder of the New Albany Woolen Mills Company, Louisville, Ky., died at his home in that city recently.

Samuel Lea, a retired woolen manufacturer, died at his home in Philadelphia recently. He was born 79 years ago in Scotland. Most of his life was spent in Philadelphia, where he built up a large business, and up to the time of his retirement, a year ago, was active in commercial circles.

Julius Freyhan, president of the Lane Mills of New Orleans, La., aged 70 years, died recently. Besides his interest in the above mills, he was financially interested in other mills and industrial enterprises in the South.

William Coult died at his home in Highlandville, Mass., recently, aged 79 years. He was a native of Leicester, England, but came to this country in 1864. For a number of years he had charge of the knitting machinery at the Boston Mfg. Co.'s plant at Waltham. Since then he had been in business for himself at Needham.

New Publications.

[Any work noticed under this head can be obtained through the office of this journal.]

Carpet Manufacture; by Fred Bradbury; Lord & Nagle Co., Boston, Mass., and F. King & Sons, Ltd., Halifax, England. Price $3.00.

This book will unquestionably be welcomed by the large number who are interested in the manufacture of carpets and rugs. The author has had at Halifax, the great English carpet manufacturing center, an opportunity of coming in practical touch with every detail of machinery described in the book. Nearly all the machinery illustrations have been taken from machines in operation at the present time. The carpet and rug patterns illustrated and described have been designed and woven under the author's supervision at the Municipal Technical School at Halifax. The work is, therefore, thoroughly practical in every respect and will prove a great aid to carpet manufacturers, designers and mill owners. The following abstract of the table of contents gives an idea of the ground covered by the 301 pages of the book:

Designing; Color; Wilton, Brussels, Tapestry; Axminster; "Chenille" Axminster, and Kidderminster and Ingrain carpets.

The book is profusely illustrated with diagrams of machinery and illustrations of carpet and rug designs.

The Textile Fibres; by J. Merritt Matthews, Ph. D. John Wiley & Sons, New York, Chapman & Hall, London. Price $3.50.

This book will prove of great value to both the textile worker and student. The author has succeeded in compiling in convenient form a large amount of information regarding the textile fibres, and deserves much credit for this substantial contribution to the useful literature of the textile industry. A concise and clear style, excellent illustrations and systematic arrangement of subjects make the book especially valuable for the busy manufacturer who frequently desires information bearing upon special problems arising in mill work. Following is an abstract from the contents:

Classification of the textile fibres; chemical nature and properties of wool and hair fibres; shoddy and wool substitutes; origin, cultivation, chemical nature and properties of silk; vegetable fibres; origin, physical structure and chemical properties of cotton; mercerized cotton; artificial silk, linen, jute, ramie, hemp; qualitative and quantitative analyses of textile fibres; microscopic analysis of fabrics; machine for determining strength of fibres.

The Cotton Fibre and the Mixing of Cotton; Hugh Monie, Jr., author of Sizing Ingredients and editor of The Electrical, Mechanical and Textile News; Abel Heywood & Son, Manchester, England. Price $1.50.

This edition is a revision of the original work entitled "The Cotton Fibre, Its Structure, etc.," to which has been added a section on the mixing of cotton, a process that may properly be called the foundation of successful cotton manufacturing. Since the first edition was written the author has had opportunity of studying the cotton industry in India and on the Continent and has embodied the information thus obtained in the present volume. The work is a useful handbook relating to the leading textile fibres of the world and the section on mixing adds much to its value. It is printed in clear type and freely illustrated.

The English Policy of Protection (La politique protectionniste en Angleterre); by Georges Blondel; Victor Lecoffre, Paris. Price $1.00.

A change in the tariff policy of a nation affects not only the domestic industries, but the commercial relations of foreign countries as well. The proposed change in the policy of England from free trade to protection has been eagerly discussed in France where the commerce with England is of large proportions. M. Blondel discusses the question from the French point of view; he looks upon the Chamberlain policy as threatening grave consequences to France. He considers successively the following topics: Economic Evolution of the English People; Present Situation; Policy of Chamberlain; British Imperialism; Objections; What Will England Do? Dangers to France. In an appendix he tries to explain why English industries have been outstripped by America. The book is especially interesting as presenting views from a new standpoint on a subject that has been worn threadbare. The text is in French.

Business Literature.

Pennsylvania Museum and School of Industrial Art.

The twenty-eighth annual report of the Pennsylvania Museum and School of Industrial Art contains the usual information found in this publication. It is freely illustrated with cuts of the buildings and designs by the students.

Cotton Movement and Fluctuation; Latham, Alexander & Co., New York City.

The new edition of this volume contains the usual information found in previous issues, which has made this work the standard book of reference in the cotton trade. The present issue contains articles by Ellison & Co., of Liverpool, and Alfred B. Shepperson, of New York, written especially for this work. In addition to the annual review of the cotton trade, it gives tables of receipts, stocks, exports and imports, acreage, visible supply and much original matter. The book is issued for free distribution among the customers and friends of the publishers and is not for sale.

The Protection of Steel; Joseph Dixon Crucible Co., Jersey City, N. J.

This folder does not deal with the tariff question, as its title implies, but is used by the Joseph Dixon Crucible Co. to call attention to the protection of steel with silica graphite paint, a process which both free traders and protectionists are using with great success.

Hydraulic Turbines and Governors; Allis-Chalmers Co., Milwaukee, Wis.

This illustrated pamphlet gives a description of the hydraulic turbines and governors built by the

Allis-Chalmers Co. It contains graphic charts showing the variations of load and speed of the 5,000 h. p. turbine at Niagara Falls controlled by the Allis-Chalmers governor.

Awards to Exhibitors of Silk Goods.

The international silk jury at the St. Louis Exposition was composed of twenty-six members, the officers being as follows: Franklin Allen, President, New York; Etienne Charbin, Vice-President, France; Celestino Piva, Secretary, New York. The following prizes were awarded:

GRAND PRIZES.

American Velvet Co., New York and Stonington, Conn.
Empire Silk Co., New York, Paterson, N. J., and Carbondale, Pa.
Johnson, Cowdin & Co., New York, Paterson, N. J., and Phoenixville, Pa.
Liberty Silk Co., New York, New York City, and Hornellsville, N. Y.
Pelgram & Meyer, New York, Paterson, Boonton, N. J., and Harrisburg, Pa.
Phoenix Silk Mfg. Co., New York, Paterson, N. J. Allentown, Pa., and Pottsville, Pa.
Royal Weaving Co., Pawtucket, R. I.
R. & H. Simon, New York, Weehawken, N. J., and Easton, Pa.
Smith & Kaufman, New York and New York City.
John N. Stearns & Co., New York, Williamsport, Pa., Brooklyn, Elmira, N. Y., and Petersburg, Va.
Wm. Strange Co., New York and Paterson, N. J.
York Silk Mfg. Co., New York and York, Pa.
Silk Association of America, New York, for great efficiency in benefitting the silk industry and commerce of America, and for its reports on the silk trade of the world.

GOLD MEDALS.

American Silk Label Mfg. Co., New York.
Cardinal & Becker, New York and Paterson, N. J.
Norfolk Silk Co., New York, Long Island City and New York City.

SILVER MEDAL.

Taylor Silk Mfg. Co., Paterson, N. J.

BRONZE MEDAL.

Allen Chesters, Paterson, N. J.
M. C. Migel & Co., New York (for collection of pictures woven in silk).
Fearn Sisters Silk Co., Roby, Ind.

Sibson & Stern Remove.

Sibson & Stern, Inc., manufacturers of underwear trimmings have removed to the new mill which they have just erected at Stenton and Wyoming avenues, one block north of Wayne Junction, Germantown, Pa. This location is very near the Wayne Junction station and the Philadelphia & Reading Railway and the Germantown avenue and other trolley lines. The plant has been especially designed for their use and with their increased capacity all orders can be promptly attended to.

Allis-Chalmers Co. at St. Louis.

Allis-Chalmers Company has swept the field by winning the highest honors at the St. Louis Exposition with each of their three exhibits: steam engine, electrical, and mining.

The five-thousand horse power engine, popularly known as the "Big Reliable," and the huge generator built by this company's electrical department, otherwise known as the Bullock Electric Manufacturing Company, each won a grand prize. These two machines, forming the huge unit which supplies the world-famous decorative lighting of the exposition buildings and grounds, and which have never failed under the most frequent and most unexpected emergency loads, are so well known as the dominating features of the machinery section of the Exposition that it is unnecessary to describe them again. The "Big Reliable" has become no doubt the most renowned power unit in the world.

In the Department of Mines and Metallurgy the Allis-Chalmers exhibit was also awarded a grand prize, the highest honor given by the international jurors. Among other features of this mining exhibit and contributing to the success which won the highest award are the famous style "K" Gates gyratory rock and ore breakers, the Overstrom concentrating table, the Allis-Chalmers style "A" and "B" crushing rolls, and Gates ball and tube mills, and the heavy six-foot Huntington mill, known as the "Anaconda" type, manufactured only by this company, which is recognized as among the leaders in the engineering world.

The Bullock Electric Mfg. Company's grand prize also covered all their alternators, synchronous motors, direct current generators and motors, and rotary converters. This award, in competition with older and great competitors, is a significant tribute which must interest all users of electrical machinery. In addition to all this the Bullock system of multiple-voltage control of motors won a gold medal.

It is evident that the Allis-Chalmers Company are fulfilling the promises they made when they extended the scope of their operations.

The Burt Manufacturing Co.

The Rock Island Arsenal, at Rock Island, Ill., has recently purchased a large oil filter from the Burt Manufacturing Co., of Akron, Ohio. This well-known firm not only supplies the U. S. government with their products but does an extensive business abroad. Besides shipping two of their eight-inch exhaust heads for the use of the government at Seattle, Washington, they have recently made a shipment of sixteen exhaust heads, and nine oil filters, to supply their English trade. They also report the sale of three oil filters to their agency at Calcutta, India.

W. E. Caldwell Co., Louisville, Ky., manufacturers of towers, tubs and tanks of all kinds, has opened a Chicago agency at 153 LaSalle St., Room 607, in charge of R. S. Johnson, sales agent.

The Lawrence Dye Works Company, Lawrence, Mass.

The business of the Lawrence Dye Works Co., Lawrence, Mass., is steadily on the increase. Under the able management of their agent, Mr. Ivar L. Sjostrom, it has reached mammoth proportions and this company is now entitled to rank among the leading concerns of its kind in this country. Their works are admirably located in an important textile centre and their facilities for handling work in their line are unsurpassed. A recent visit of our representative found this concern taxed to its utmost, and the reputation that they have made for their work has enabled them to keep their plant running at its fullest capacity. Their establishment is equipped with the latest and most improved machines, which accounts for the high quality of the work they produce.

Some idea of the magnitude of this concern can be had when the fact is stated that last year they dyed and finished over one million yards of cloth in addition to their other lines and this year they are working at the rate of one and a half million yards. Mr. Sjostrom has been associated with this company about five years and has completely reorganized and rearranged their machinery for the economic handling of the stock. By this arrangement no unnecessary manipulation is required, and goods are turned out from the beginning to the end by the most able and labor saving methods.

This company handles worsted and cotton yarns, slubbing and raw stock, worsted and woolen men's wear, dress goods, cottons, worsteds, etc. They also make a specialty of winding and spooling for the trade and are also dealers in colored cotton yarns. They also pay particular attention to redyeing and refinishing of worsteds and woolens.

The Kennicott Water Softener.

The grand prize of the Louisiana Purchase Exposition has been awarded to the Kennicott Water Softener Co. of Chicago. It has a most imposing exhibit in the Transportation Building.

This system is very largely in use by railways, where the importance of soft water is great and the conditions most exacting. The textile industry is not yet as keen as it should be to the advantages of pure water supply, probably because the wastes arising from hard or unsuitable water are not always apparent, and for that reason unappreciated. They none the less exist, and many enterprising manufacturers are wakening up to the saving that can be made in this direction.

A New Philadelphia Office.

The Geo. D. Mayo Machine Co. of Laconia, N. H., builders of the Mayo full automatic knitter, have notified the trade that they have opened a branch office at Philadelphia, Pa., and have taken quarters in the Knickerbocker Bldg., 6th and Arch Sts. They have appointed B. M. Denney to act as their representative there. Mr. Denney is widely and favorably known to the trade.

A Model Southern Mill Village.

The Royal Bag & Yarn Manufacturing Company, Charleston, S. C., has recently filled a very large order for 300,000 red sacks for bagging guano. For the purpose of dyeing this large quantity, it was necessary to make an addition to its dye plant. This concern now employs several hundred operatives. In the past few years it has erected a plant to weave its own bags and spin its own yarn. The mill is located in the suburbs of Charleston in its own mill village, and the officers of the company give close attention to the comfort of the employees, who are provided with comfortable separate houses containing four or five rooms, each with a yard of its own, for which 75 cents to $1 per week rent is paid. A free day school is conducted and a kindergarten provided for the care of the younger children. Chapel services are held each Sunday afternoon, and there is a flourishing Sunday school in the village. The officers of the company are George A. Wagener, president; Stephen Thomas, vice president; George Lunz, secretary and treasurer. S. B. Sargent is the superintendent.

Credit Where Credit is Due.

The Willcox & Gibbs Sewing Machine Co., 658 Broadway, New York, recently received a letter from the Schoenherr Original Linen Mesh Co. of New York, manufacturers of linen mesh underwear, which was all the more gratifying because it came as an agreeable surprise. The Schoenherr Co. has been awarded grand prize at the Louisiana Purchase Exposition for its underwear. It writes as follows:

"Messrs. Willcox & Gibbs S. M. Co., City.

"Gentlemen: We have much pleasure in informing you of the fact that, according to telegraphic advices received today from St. Louis, we have been awarded the 'Grand Prix' for underwear at the Louisiana Purchase Exposition.

"To not a small extent we attribute our success to the splendid work of your 'Overlock' and felling machines.

"Very truly yours,
"Schoenherr Original Linen Mesh Co.,
"Albert Krohn, Mgr."

Mill Papers and Press Boards.

The J. L. N. Smythe Co., 23-25 North 4th St., Philadelphia, gives particular attention to the textile mill trade and carries in stock a line of papers and boards for mill use. Besides the ordinary wrapping paper of all grades, it carries colored wrapping, glazed and tissue paper for fine fabrics and silks, manila paper for wrapping and lining cases and an especially tough paper, called leather fibre, which comes in different sizes and weights, also in rolls.

They handle a full line of press papers and boards, and invite correspondence from manufacturers interested, to whom they will be pleased to send samples and quote prices.

The B. F. Sturtevant Co.

The simplicity of the handsome new office building of the B. F. Sturtevant Co. at Hyde Park, Mass., brings it into harmony with the shop buildings and still it bears the appearance of a modern schoolhouse. It is about 45 feet wide and 125 feet long, with four stories and a basement. One-half of the basement is occupied by the printing plant and its stock room. Here are printed the catalogues, circulars, letter-heads and all printed forms used in the office and shops. Another portion is used as a lunch room for the office force; the heating and ventilating apparatus is also located in the basement. Naturally the building is heated and ventilated by the Sturtevant fan system. The galvanized iron heat flues are built into the walls and convey the heated fresh air through register openings into the various rooms. On the first floor are located the production, time and cost departments, and the publication department. On the second floor are the sales and accounting departments, cashier, clerks, etc., the manager's office and the filing department. The drafting rooms occupy the whole of the third floor, while the blue-print department is on the fourth floor. The fourth floor also contains two large vacant rooms which may be utilized for future growth, either as offices or drafting rooms. Eight large fire-proof vaults, each about 9 feet wide and 19 feet long give abundant room for the safe keeping of books, correspondence, drawings and valuable data.

The first two floors are finished in quartered oak and the upper two in plain oak. The wainscoting and painting, tinting of the walls and ceilings and the office fixtures are in excellent taste and go far toward making this office building one of the finest in the country.

Among the many recent installations for heating and ventilating public buildings is that for the Worcester City Hospital at Worcester, Mass. The buildings, seven in number, are located a short distance from the centre of the city at the top of a long hill and are therefore exposed to severe weather in the winter. The arrangement in the New Ward Building is typical of the Sturtevant system. A Sturtevant fan draws the fresh air from the top of the building, a distance of about 45 feet from the ground, through brick flues, and into galvanized iron ducts to the tempering coil, where the chill is taken from the air. It is then drawn through the fan which runs at a slow speed, typical to public building work, and forced through the heater containing coils of 1 inch steam pipes enclosed in a fire-proof steel plate jacket and thence to the plenum chamber, which is divided horizontally into two chambers, one for the hot air and one for the tempered air, the latter passing underneath the heater from the fan. By means of mixing dampers, automatically controlled, the air is mixed to a desired temperature and is forced by the pressure from the fan through the distributing ducts to the different rooms. To assure positive ventilation in the rooms, a Sturtevant electric propeller fan located in the basement draws the air through registers in the floor into galvanized iron ducts and discharges it outside.

The increase in mechanical efficiency of engines with forced lubrication has been clearly shown by recent engines built by the B. F. Sturtevant Co. at Hyde Park, Mass., and fitted with a forced pump lubricating system. An increase of from eight to ten per cent. is shown, and with their latest type of vertical single engines a mechanical efficiency averaging 94 per cent. is attained.

The increasing demand for mechanical draft continues, not only in the United States, but in other countries. The power plant for the new shops of the Mexican Central Railway Co., at Aguascalientes, Mexico, contains a Sturtevant induced draft apparatus consisting of two steel plate fans, each driven by a Sturtevant vertical engine. Each fan is capable of maintaining a draft pressure in the flue connection of each boiler equal to 3/4 of an inch of water when handling all the gases of combustion burning 35,000 lbs. of coal per hour with a flue temperature of 600 deg. F.° The ring oiling fan bearings next to the fan are water-jacketed to prevent overheating. A counter-balanced sliding damper permits either fan to be cut off from the flues or both may be operated at the same time. The engines are provided with regulating valves which automatically control the steam pressure.

Commission Agents.

B. J. Skaller, the well known mill agent whose office has for some time been located at 66 East Van Buren Street, Chicago, has taken his brother, Isadore Skaller, into partnership. The firm name will continue as B. J. Skaller.

Mr. Skaller has represented the Hightstown Smyrna Rug Co., of Hightstown, N. J., with several other accounts. While in the East early in October, Mr. Skaller secured a number of new accounts, among which are A. Theo. Abbott & Co.'s upholstery goods, The Mt. Penn Knitting Co., of Reading, Pa., D. D. Coldren, Schuylkill Haven, Pa. They will also represent for the coming season the Consolidated Knitting and Spinning Mill, Reading, Pa., and the Enterprise Hosiery Mill, Elizabethville, Pa., also the new Windsor Hosiery Mill, Mechanicsburg, Pa., and the Allen Knitting Mill, Allen, Pa. This gives them a large range of merchandise, including rugs, upholstery goods, underwear and hosiery.

B. J. Skaller and his brother are hard working and energetic young men. The senior member has made a strong record since he entered business six years ago, and his brother has been connected with a large wholesale house in Chicago.

Oil Filters.

The Burt Manufacturing Co., of Akron, Ohio, who make the well-known Cross oil filters, have developed what is probably the largest export business in this line in the world. They have recently made a shipment of five oil filters to their agency in Helsingfors, Finland; also three large shipments to their representative in Havana, Cuba, and four filters to customers at Valparaiso, Chile.

A New Electric Fan.

The American Blower Co., Detroit, Mich., call attention to the striking progress made by them in the manufacture of direct-connected disc fans and motors. The new fan is a modification of their well known "A B C" fan, which has been on the market perhaps longer than any other and is in more general use.

Previous to the working out of this design, the custom has been to attach a motor to the arms of a disc fan, but the excessive weight of the motor, overhung in this way, has often been an objectionable feature. In the new combination the motor is placed on a substantial base, there being no bear-

ings except those in the motor. This makes by far the most rigid and compact form of construction, the total width of the outfit being no greater than with the overhung type.

The exceptionally high efficiency of both the "A B C" fan and the Westinghouse motor, together with the fact that the prices charged are very low, makes these outfits unusually desirable for cooling and ventilating.

Further information can be obtained by addressing the Detroit office of the American Blower Company or any of its branches.

Dyeing and Finishing Machinery.

The firm of E. Fearon & Co., 110 Oxford St., Philadelphia, are located in their new shops and doing a good business in general repairs to textile dyeing, drying and finishing machinery. Mr. Fearon was master mechanic at the Quaker City Dye Works for twenty years and his varied experience warrants that work submitted to him will receive the best attention. He respectfully solicits orders from the trade.

Another Gold Medal.

The Eureka Fire Hose Co., New York, have been advised that their "Eureka," "Paragon" and "Red Cross" brands of seamless rubber lined fire hose have been awarded the highest honor at the St. Louis Exposition, a gold medal. It was to be expected that the product of the Eureka Fire Hose Co. would receive such substantial compliment, as their fire hose is recognized in every fire department where reliability is paramount to every other consideration at the time of great conflagrations.

Heading Off a Canard.

The Eureka Fire Hose Co., New York city, desire to "head off" a canard that is going the rounds of rumor mongers relative to a change in the agency of the company at Chicago, and to state that W. H. Salisbury & Co., who have handled the product of the Eureka Fire Hose Co. for so many years with marked success, will continue to be their only representatives at Chicago. It is furthermore hoped that they will remain indefinitely in control, thus adding to a long term of service that has been characterized by the highest degree of business tact and integrity.

Ran Overtime All Summer.

The Baker Machine Co., of New Bedford, report business as being something remarkable considering the present condition of the cotton industry. During the month of August they ran their plant fourteen hours per day and during the month of September they were obliged to run steadily during the week using two gangs of men, each gang working eleven hour shifts. They make a specialty of presser, flyer and steel roll work and turn the work out promptly. They have also introduced machinery for refluting comber detaching rolls and making the top roll of solid brass with spindle steel bearings. They have been very busy in this department during the past six months.

Grand Prize.

The Roessler & Hasslacher Chemical Co., 100 William St., New York, have been awarded grand prize at Louisiana Purchase Exposition. An interesting feature of their exhibit is their booth in the Palace of Liberal Arts, representing "The Old Alchemist," after the celebrated painting of Teniers. The contrast between this and the modern exhibit of their various products presents in a striking manner the difference between the old methods of tradition and the modern methods of science.

Yarn Dyed in the West.

The Phoenix Steam Dye House, 12 Southport Ave., Chicago, Ill., wants Southern and Western mills to know that it makes a specialty of mill work, particularly cotton yarns, and can guarantee prompt attention and satisfactory work. It calls attention to the fact that by sending yarn to them, Western and Southern mills will save time and freight, as compared with sending it East. As to the quality of its work, it refers to its many satisfied customers for whom it is working regularly.

The Chinese Textile Industry in the Seventeenth Century.

The following account of the textile industry in China during the seventeenth century is from "Memoirs and Observations" of Father Louis Le Comte, one of a number of Jesuit Fathers who were sent to China in 1685 by Louis XIV of France, to report upon the industrial and social conditions in Eastern countries:

"What I have observed of them in general is this. Their silk, without question, is the finest in the world; they make of it in many Provinces, but the best and fairest is to be found in that of Chekiam, because the soil is very proper for mulberry trees, and because the air is endued with a degree of heat and moisture, more conformable to the worms that make it. Everybody deals in it and the traffick of it is so great, that this Province alone is able to supply all China and the greatest part of Europe.

"Yet the finest and fairest silks are wrought in the Province of Nankim, the rendevous of almost all the good workmen. It is there that the Emperor furnisheth himself with the silks spent in the palace, and with those he presents the Lords of the Court; the silks of Quantum, notwithstanding, are valued above all amongst strangers; and the silks of this Province are also more saleable, and go off better than those of all the other Provinces of China.

"Altho' all these silks have some resemblance to ours, yet the workmanship hath something in it that makes a difference. I have seen Plush, Velvet, Tissue of Gold, Satin, Taffaty, Crapes, and several others of which I do not so much as know the name in France. That which is the most currant amongst them is called Touanze; it is a sort of Sattin, stronger but not so glossy as ours, sometimes smooth, and sometimes distinguished by flowers, birds, trees, houses, and shady groves.

"These figures are not raised upon the ground by a mixture of raw silk, as our workmen are used to do in Europe, which makes our work not so durable; all the silk in these is twisted, and the flowers are distinguished only by the difference of colours, and shadowing. When they mix gold or silver with it, it does much resemble our Brocado, or flower'd silk; but their gold and silver is wrought after a manner particular to them alone; for whereas in Europe we draw the gold as fine as it can be possibly twisted with the thread, the Chinese to save the matter or because they did not bethink themselves of this trick, satisfy themselves to gild or silver over a long leaf of paper, which they afterward cut into little scrowls, wherein they wrap the silk.

"There is a great deal of cunning therein; but this gilding will not last long. Water or even moistness itself will ternish the splendor of it quickly; yet for all that, when the pieces come out of the workman's hands they are very fine, and one would take them for valuable pieces. Sometimes they are contented only to put into the pieces these little scrowls of gilded paper, without rolling them upon the thread, and then the figures, altho' pretty and finely turn'd, do not last so long by far; and the silk thus flowered is at a lower rate.

"Amongst the different figures they represent, the dragon is the most ordinary. There be two sorts of them; one, to which they make five claws, called Lom, is ony used upon the stuffs designed for the emperor: This is his Arms, which Tohi, founder of the Empire, first took for himself and successors about four thousand years ago. The second sort of dragon hath but four claws and is named Mam. The Emperor Vouvam, who reigned two thousand, eight hundred and thirty-two years, ordained that everybody might bear the same, and since that time the use of it has grown common. . . .

"They make use of another kind of stuff in summer which the Chinese call Cha; it is not as close nor hath so good a gloss as our taffaty, but much more substantial; also several people desire to have it smooth and even, yet most wear it powdered with great flowers pierced through, and cut like your English lace; and many times these piecings are so numerous that one can scarce discern the body of the silk. Besides the taffaty is not dear; a whole piece, enough to make a long vest and surtout will not amount to above two guineas.

"The third is a particular sort of taffaty, that serves for drawers, shirts, linings, they call it Tcheouze; it is close, and withal so pliant that fold, and double it, and squeeze it with your hand as long as you please you can scarce ever rumple it. It is sold by weight and is so serviceable that they wash it as they do linnen, without losing much of its former lustre.

"Besides the ordinary silk, of which I but now spoke, which we know in Europe, China hath another sort, which you meet with in the Province of Quamtum. The worms from which they take it are wild, so they go to seek for them in the woods; and I am not sure whether or no they breed of them in houses. This silk is of a gray colour, void of any gloss, so that those who are not well acquainted with it take the stuffs that are made of it for linnen or for one of the coarsest druggets; yet for all that they infinitely value it and it costs more than sattin. They call them Kien Chou; they will endure a long time; though strong and close, yet do they not fret; they wash them as they do linnen, and the Chinese assure us that spots cannot spoil them, and that they do not so much as take oile itself.

"Besides cotton linnen that is very common, they use also, for the summer, nettle linnen for long vests; but the linnen which is the most valued and is to be found nowhere else, is called Copou; because it is made of a plant that the people of the country call Co, found in the Province of Fokien. It is a kind of creeping shrub, whose leaves are much bigger than ivy-leaves; they are round, smooth, green within, whitish and cottony or downy on the outside. There be some of the stalks as thick as your finger and pliable and cottony as its leaves are. When it begins to dry, they make the sheaves of it to rot in water, as they do flax and hemp. They always peel off the first skin, which they throw away, but of the second which is much more fine and delicate, they divide it by the hand into very slender and very small filaments, without beating or spinning it. So they make that linnen of which I spake, which they call Copou. It is transparent, pretty fine, but so cool and light that one would think he had nothing on his back."

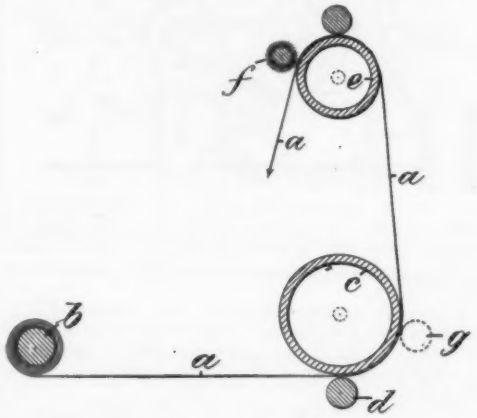
Recent Textile Patents.

CARDING MACHINE LAP FEEDING DEvice. 772,832. Charles Schofield and Isaac Reeder, Philadelphia, Pa.

CLOTH TREATING. 772,598. John W. Yates, Whaley Bridge, Eng.

In dividing or cutting a cloth by the mechanical means or devices at present in use—as, for example, in the production of handkerchiefs from a printed piece—much time is lost and special devices or machinery have to be employed. In cutting or dividing a cloth along sinuous or wavy lines, so as to produce a pattern along the severed edges, a greater amount of time is consumed and more complicated devices have been necessary.

With this invention the division or severance of cloth along the most complicated and intricate

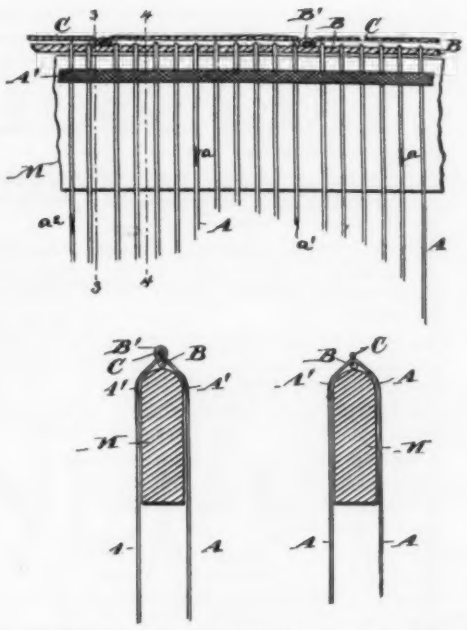


lines may be effected in as simple a manner as along straight lines, and can thus easily produce sections or pieces of fabric having any desired configuration, which may be complete in themselves or may be the component parts of garments or the like.

In carrying these improvements into effect the fabric which is to be divided has printed, impressed or otherwise placed upon it a line of acid or other substance adapted to destroy, weaken, or corrode that part of the fabric upon which it is placed. Such a line follows the line along which the cloth is to be divided. The fabric so treated is afterward easily separated along the acid line when the chemical action has taken place, and this chemical action may be hastened by passing the treated fabric over a heated roller or by otherwise subjecting it to heat. If desired the division may be effected by subjecting the fabric or the acid-treated portions to a vigorous brushing while it is passing over the heated surface. This brushing serves to remove the corroded parts of the fabric and to clean and smooth the severed edges.

LOOM HARNESS. 771,342. Paul A. Wagner, Carlstadt, N. J.

This invention relates to thread-harness manufactured in continuous widths, and its object is



to provide means for facilitating the arrangement of the heddles on the shafts so that the required number, properly spaced for the kind and quality of fabric to be woven may be quickly ascertained and positioned.

LOOMS AND FILLING CARRIER THEREfor. Shuttle for automatic. 772,505. C. H. Draper, Hopedale, Mass., assignor to Draper Co., Hopedale, Mass.

LOOM HARNESS. 771,342. Paul A. Wagner, Carlstadt, N. J.

LOOM FILLING FEEDER. Weft Replenishing. 767,427. William Oldfield, New Bedford, Mass., assignor to Draper Co., Hopedale, Mass.

LOOM FILLING REPLENISHING MECHANISM. 769,210. Belvia J. Dobbins, Ninety-six, S. C., assignor to Draper Co., Hopedale, Mass.

LOOM HARNESS MOTION. 770,116. Charles F. Roper, Hopedale, Mass., assignor to the Draper Co., Hopedale, Mass.

LOOM HARNESS OPERATING MECHANISM. 768,143. Charles F. Perham, Lowell, Mass., assignor to Perham-Stickney Co., Tewksbury, Mass.

LOOM HARNESS EVENER. 772,180. Eppa H. Ryon, Worcester, Mass., assignor to Crompton & Knowles Loom Works.

LOOM HEDDLE. 772,800. Michael B. Griffin, Pascoag, R. I.

LOOM LET OFF AND TAKE OFF MECHANism. 772,890. William F. Kintzing, Hanover, Pa.

LOOM PICKING MECHANISM. 772,506. George M. Foster, Manchester, N. H., assignor of one-third to Harry Everett Parker, Manchester, N. H.

LOOM SHUTTLE CHECKING MEANS. 772,048. Jonas Northrop, Hopedale, Mass., assignor to Draper Co., Hopedale, Mass.

LOOM WARP STOP MOTION. Electrical 12,274. Frederic Kip, Montclair, N. J., assignor to the Kip-Armstrong Co.

LOOM SHUTTLE CHECK. 763,107. Benjamin F. McGuiness, Worcester, Mass., assignor to Crompton & Knowles Loom Works, Worcester, Mass.

LOOM SHUTTLE CHECK. 760,929. William Simms, Columbia, S. C., assignor to Draper Co., Hopedale, Mass.

LOOM SHUTTLE AUTOMATIC THREADING DEVICE. 12,230 (Reissue). Robert L. Cumnock, Anderson, S. C.

LOOM SHUTTLE LOCK. 761,986. Jonas Northrop, Hopedale, Mass., assignor to Draper Co., Hopedale, Mass.

LOOM SHUTTLE SELF THREADING. 762,247. James H. Northrop, Tustin, Cal., assignor to Draper Co., Hopedale, Mass.

LOOM SMASH PROTECTOR. 762,236. John H. Hadfield, Fall River, Mass.

LOOM TAKE-UP MECHANISM. Narrow Ware. 760,761. Eppa H. Ryon, Worcester, Mass., assignor to Crompton & Knowles Loom Works, Worcester, Mass.

LOOM TAKE-UP STOP MOTION. 762,426. Alida M. Marcoux, Hopedale, Mass., assignor to Draper Co., Hopedale, Mass.

LOOM TEMPLE. 760,645. Robert P. Pearson, Gloucester City, N. J., assignor to Draper Co., Hopedale, Mass.

LOOM TEMPLE. 761,222. Edmond Guilbert, Woonsocket, R. I., assignor to Draper Co., Hopedale, Mass.

LOOM WARP CROSSING MECHANISM. 761,416. Nathaniel M. Shinn, Philadelphia, Pa., assignor to Robert Dornan and Thomas B. Dornan, Philadelphia, Pa.

LOOM WARP STOP MOTION. 762,569. Horace Wyman, Worcester, Mass., assignor to Crompton & Knowles Loom Works, Worcester, Mass.

LOOM WARP STOP MOTION MECHANISM. 763,119. Orren A. Sawyer, Lowell, Mass., assignor to Draper Co., Hopedale, Mass.

MERCERIZING APPARATUS. Yarn. 770,920. Isaac E. Palmer, Middletown, Conn.

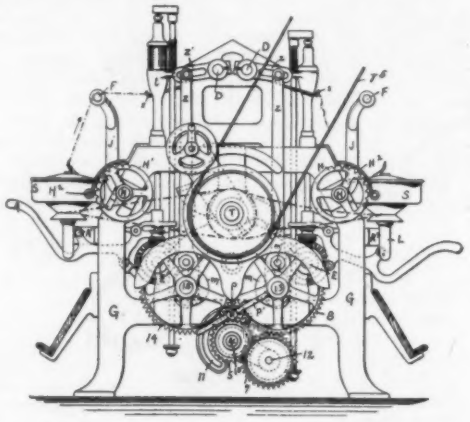
SPINDLES. Bobbin Clutching Means for Rotatable. 772,559. John C. Edwards, Brookline, Mass., assignor to Sawyer Spindle Co.

SPINDLES. Bobbin Clutching Means for Rotatable. 772,584. Charles A. Smith, Hopedale, Mass., assignor to Sawyer Spindle Co.

SPINDLES. Bobbin Clutching Means for Rotatable. 772,599. John A. York, Hopedale, Mass., assignor to Sawyer Spindle Co.

SPINNING MACHINE. 771,059. David Gessner, Worcester, Mass.

1. In a spinning-machine, in combination with the spinning-pot and its spindle, a pulley having a portion of its bearing surface formed upon the pot.



2, In a spinning-machine, in combination a spinning-pot, its spindle, a downward conical extension from the bottom of the pot and a pulley formed by said downward extension and an attached cone.

3. In a spinning-machine, in combination, a spinning-pot, its spindle, a sleeve c^3 and a lateral extension forming with the bottom of the pot a bearing-surface for a driving-belt, substantially as described.

4. In a spinning-machine, in combination, a spinning-pot having a central exit-opening, its spindle, and a yielding upward extension of said spindle with the pot co-operating with the walls of said exit-opening to form a tension device

SPINNING RING. 771,152. Harrison B. Hoyle, Worcester, Mass.

SPINNING RING TRAVELER. 772,527. Lemuel Mellett, Somerville, Mass.

SPINNING OR TWISTING. 771,397. Frederick W. Sawyer, Boston, Mass., assignor to Cocoon Spinner Co.

SPINNING AND TWISTING APPARATUS. 771,396. Frederick W. Sawyer, Boston, Mass., assignor to Cocoon Spinner Co.

SPINNING AND TWISTING MACHINE. 771,720. Frank E. Damon and Charles P. Thiel, Lawrence, Mass., assignors to Davis & Furber Machine Co., North Andover, Mass.

WARPER COMB. Metal. 772,582. Alonzo E. Rhoades, Hopedale, Mass., assignor to Draper Co., Hopedale, Mass.

WOVEN FABRIC. Double Faced. 772,709. Joseph Elias, Philadelphia, Pa.

WOVEN FABRIC. 761,554. William M. Stevenson, Springfield, Mass., assignor to Hodges Fiber Carpet Co., Springfield, Mass.

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Bell Pure Air & Cooling Co.
Schutte & Koerting Co.

Appraisals.
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Architects and Mill Engineers.
Ballinger & Perrott.
Dean & Main.
Ferguson, John W.
Stearns & Castor.
Suck, Adolph.

Auditors.
Garry, Brown & Co.

Automatic Feeds for Cotton and Wool.
American Drying Machinery Co.
Harwood, Geo. S. & Son.
Leigh, Evan A.
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Philadelphia Textile Machinery Co.
Schofield, Wm. Co.
Woonsocket Machine & Press Co.

Balling Machine.
North Chelmsford Machine Co.
Torrance Mfg. Co.

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Baskets.
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Morris & Co.

Belting.
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Shultz Belting Co.
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Belt Dressing.
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Dixon, Jas., Crucible Co.
Houghton, E. F., Co.
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Bleaching Kiers.
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Roessler & Hasslacher Chemical Co.

Blowers and Blower Systems.
American Blower Co.
Barney Ventilating Fan Works.
Boston Blower Co.
Buffalo Forge Co.
Mass. Fan Co.
Parsons Mfg. Co.
Philadelphia Drying Machinery Co.
Schutte & Koerting Co.
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Schnitzler, Chas. H.

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Kolb, Frank E.

Bobbins, Spools, Shuttles, Etc.
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Tebbets, E. L. & Co.

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McLeod & Henry.

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Boiler Setting.
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Boxes, Cloth Boards, Etc.
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Boxes (Paper).
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Braiding Machinery.
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Textile Machine Works.

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Burr Pickers.
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Burlaps.
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Morris & Co.

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Riverdale Woolen Co.

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Philadelphia Textile Machinery Co.
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Card Clothing.
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Stoddard, Haserick, Richards & Co.

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Roessler & Hasslacher Chemical Co.
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Textile Finishing Machinery Co.

Clutches.
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Hunter, James, Machine Co.
Reeves Pulley Co.

Combs (Wool and Cotton).
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Leigh, Evan A.
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Riley, C. E. & Co.
Stoddard, Haserick, Richards & Co.

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Taunton, New Bedford Copper Co.

Coppersmiths.
Beer, Paul.
Badger, E. B. & Sons Co.

Copper Work for Dyers.
Butterworth, H. W. & Sons Co.
Textile Finishing Machinery Co.

Cotton.
Blaisdell, S., Jr., Co.
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Baker Machine Co.
Barker, James.
Butterworth, H. W. & Sons Co.
Crompton & Knowles Loom Works.
Crompton-Thayer Loom Co.
Cohoes Foundry & Machine Co.
Coldwell-Gildard Co.
Curtis & Marble Machine Co.
Draper Company.
Easton-Burnham Co.
Elliott & Hall.
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Firth, William, Co.
Houghton, L. T.
Howard & Bullough American Mach. Co
Kilburn, Lincoln & Co.
Kitson Machine Co
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Lowe, S. C.
Lowell Machine Shop.
Mason Machine Works.
Metallic Drawing Roll Co., The.
Neverslip Cop Spindle Co.
North Chelmsford Machine Co.
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Philadelphia Textile Machinery Co.
Rheinhauer, D. & Co.
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Schaellibaum, Robert, Company.
Schofield, Geo. L.
Stoddard, Haserick, Richards & Co.
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Vacuum Dyeing Machine Co.
Whitin Machine Works.
Woonsocket Machine & Press Co.

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Atherton, A. T., Machine Co.
Howard & Bullough American Mach. Co
Kitson Machine Co.
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Riley, C. E. & Co.
Stoddard, Haserick, Richards & Co.

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Bosson & Lane.

Cotton Waste.
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Blaisdell, S., Jr., Co.
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Tifft Bros.

Crayons.
Dixon, Jos., Crucible Co.
Lowell Crayon Co.

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Langston, Samuel M.

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Riggs & Brothers.

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Hunter, Jas., Machine Co.
Kenyon, D. R. & Son.
Mass. Fan Co.
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Philadelphia Textile Machinery Co.
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Sturtevant, B. F., Co.
Textile Finishing Machinery Co.
Whiteley, William, & Sons, Ltd.
Whittle, Jas. H.

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Bull, William C.
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Fearon, E., Co.
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Kenyon, D. R. & Son.
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Hill, James, Mfg. Co.

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Bailey, Frank.
Haedrich, E. M.

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Berlin Aniline Works.
Bischoff & Co.
Bosson & Lane.
Cassella Color Co.
Grasselli Chemical Co.
Kalle & Co.
Farbenfabriken of Elberfeld Co.
Ford, J. B., Co.
Geigy Aniline & Extract Co.
Geisenheimer & Co.
Johnson, Chas. A. & Co.
Kuttroff, Pickhardt & Co.
Leyland, Thos. & Co.
Metz, H. A. & Co.
Molt Bros. (Indigo Blue).
Roessler & Hasslacher Chemical Co.
Selling Co., The.
Solvay Process Co.
Sykes & Street.
Thayer, Ed. M.
Vila, H. S.

Dynamos and Motors.
Allis Chalmers Company.
General Electric Co.
Mechanical Appliance Co.
Sturtevant, B. F., Co.

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Electrical Construction.
Allis Chalmers Company.
General Electric Co.
Mechanical Appliance Co.
Sturtevant, B. F., Company.
Westinghouse Electric & Mfg. Co.

Electric Fans.
American Blower Co.
Buffalo Forge Co.
General Electric Co.
Mass. Fan Co.
Mechanical Appliance Co.
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Philadelphia Textile Machinery Co.
Sturtevant, B. F., Co.
Westinghouse Electric & Mfg. Co.

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Electric Lighting.
Allis Chalmers Company.
General Electric Co.
Sturtevant, B. F., Company.
Westinghouse Electric & Mfg. Co.

Electric Motors.
Allis Chalmers Company.
Crocker-Wheeler Co.
General Electric Co.
Mechanical Appliance Co.
Sturtevant, B. F., Company.
Westinghouse Electric & Mfg. Co.

Elevators.
Cohoes Foundry & Machine Co.
Jeffrey Manufacturing Co.
Morse, Williams & Co.
Salem Elevator Works.

Employees' Time Recorders.
Pettee & Randall Co.
Riggs & Brothers.

Engravers.
Smith Bros.

Exhaust Heads.
Burt Manufacturing Co.
Sturtevant, B. F., Co.

Expert Accountants.
Garry, Brown & Co.

Fans—Exhaust and Ventilating.
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Feed Water Heaters.
Green Fuel Economizer Co
Roberts Filter Co.
Scaife, W. B. & Sons.

Feed Water Pumps.
Goulds Mfg. Co.
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Philadelphia Water Purification Co.

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Fire Box Blocks, "Steel Mixture."
McLeod & Henry Co.

Fire Brick.
Borgner, Cyrus, Co.
McLeod & Henry.

Fire Extinguishers.
Badger, E. B. & Sons Co.

Fire Hose.
Eureka Fire Hose Co.

Fire Hydrants.
Norwood Engineering Co.

Fire Proof Doors and Windows.
Lupton's, David, Sons Co.

Flax, Tow, Hemp and Jute Machinery.
Fairbairn-Lawson-Combes-Barbour, Ltd.
Haskell-Dawes Mach. Co.
Leigh, Evan A.

Fluted Rolls.
Hood, R. H.
Leigh, Evan A.
Riley, C. E. & Co.
Thurston, A. G. & Son.

Flyers.
Leigh, Evan A.
Textile Machinery Co.

Forges.
Buffalo Forge Co.
Sturtevant, B. F., Co.

Forwarders.
McKeon, John F.

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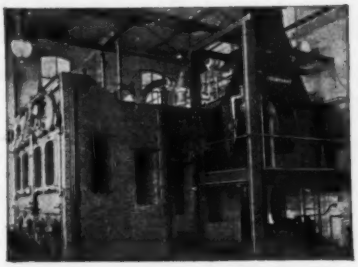
CUT YOUR COAL BILL

By using the

STURTEVANT SYSTEM *of* MECHANICAL DRAFT



Costs only 20 to 40 per cent, as much as a chimney. Increases steaming capacity of boilers. Is independent of the wind and weather

B. F. STURTEVANT CO.

BOSTON, MASS.

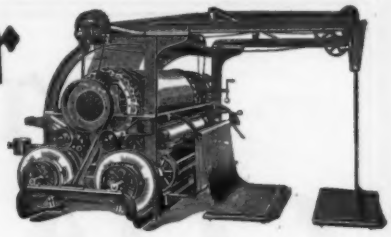
General Office and Works, Hyde Park, Mass.

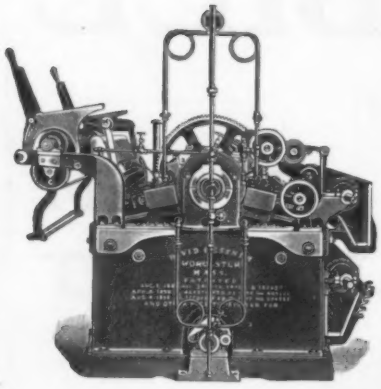
NEW YORK PHILADELPHIA CHICAGO LONDON

334

David Gessner

Worcester, Mass.

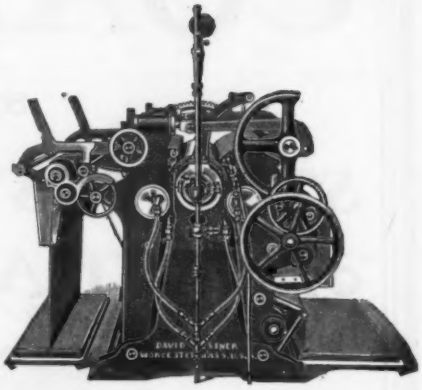




Latest Improved Cloth Finishing Machinery

—

Napping Machines and Presses a Specialty



Friction Clutches.
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Friction Cones.
Evans, G. Frank.

Fuel Economizers.
Green Fuel Economizer Co.
Parson Mfg. Co.

Furnace for Boilers.
Harris, J. B.
Parson Mfg. Co.

Fulling Mills for Woolen Goods.
Hopkins Machine Works.
Hunt, Rodney, Machine Co.
Hunter, Jas., Machine Co.
Kenyon, D. R. & Son.

Garnetts.
Leigh, Evan A.
Philadelphia Textile Machinery Co.

Gas Engines.
Jones, Lewis.

Gas Exhausters.
Sturtevant, B. F., Co.

Gauges.
Crosby Steam Gage & Valve Co.
Lunkenheimer Co.
Walworth Manufacturing Co.

Gears.
New Process Raw Hide Co.

Gear Cutting Machine.
Whiton, The D. E., Co.

Generating Sets.
Buffalo Forge Co.
Sturtevant, B. F., Co.

Grate Bars.
Parsons Mfg. Co.

Grids for Cotton Openers.
Schaellibaum, Robert, Company.

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Heddles.
Steel Heddle Mfg. Co.
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Wisconsin Mfg. Co.

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Bray, John.

Hoists and Hoisting Machinery.
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Humidifying Apparatus.
American Air Moistening Co.

Hydro Extractors.
American Tool & Machine Co.
Riley, C. E. & Co.
Stoddard, Haserick, Richards & Co.
Textile Finishing Machinery Co.
Whiteley, William, & Sons, Ltd.
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Injectors.
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Ironing Machines for Knit Goods.
Craw, J. W., Laundry Machinery Co.

Jacquards.
Halton's, Thomas, Sons.

Knit Goods, Edgings, Trimmings, Etc.
Cathcart, John & Co.
Chapin, Geo. W.
Charles, W. B.
Cheney Bros.
Friedberger Mfg. Co.
Hepner & Horwitz.
Krout & Fite Mfg. Co.
Weimar Bros.

Knit Goods, Finishing Machines, Crochet, Etc.
Bridoux, Charles H.
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Langston, Samuel M.
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Nye & Tredick Co.
Scott & Williams.
Union Special Machine Co.
Willcox & Gibbs Sewing Machine Co.

Knitting Machine Cylinders.
Branson Machine Co.
Paxton & O'Neill.
Stafford & Holt.
Stanton & Lewis.

Knitting Machinery.
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Claes & Flentje.
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Grosser Knitting Machine Co.
Jenckes, E., Mfg. Co.
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Keystone Knitting Machine Mfg. Co.
Lamb Knitting Mach. Mfg. Co.
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Mayo Knitting Machine & Needle Co.
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McMichael & Wildman Mfg. Co.
National Automatic Knitter Co.
Newton, E. A.
Nye & Tredick Co.
Paxton & O'Neill.
Quaker City Stop Motion Co.
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Schoebel, Walter.
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Grosser Knitting Machine Co.

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The New

Crompton-Thayer Loom Company

.. MANUFACTURERS OF ..

FANCY LOOMS

For Weaving Worsted and Woolen, Fancy Cottons and Silk Fabrics.

Dobbies, Box Motions and Supplies.

WORKS AND OFFICES:

677 Cambridge Street, Worcester, Mass.

Knitting Needles and Supplies—cont.
Ives, Loyal T.
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Kolb, Frank E.
Lamb Knitting Machine Mfg. Co.
Manufacturers' Supplies Co.
Mayo Knitting Machine & Needle Co.
Page Needle Co.
Rheinhauer, D. & Co.
Treat, Orien.
Wardwell Needle Co.

Labeling Machines.
Beck, Chas., Paper Co., Ltd.

Lathes.
McCabe, J. J.

Leather.
Houghton, E. F., Co.

Logs and Lumber.
Bass, E. L.

Loom Pickers.
Garland Mfg. Co.

Looms.
Asela Co.
Crompton & Knowles Loom Works.
Crompton-Thayer Loom Co.
Draper Company.
Kilburn, Lincoln & Co.
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Lowell Machine Shop.
Mason Machine Works.
Stoddard, Haserick, Richards & Co.
Whitin Machine Works.

Loopers.
Hepworth, John W. & Co.
Leighton Machine Co.

Lubricators.
Borne, Scrymser Co.
Dixon, Jos., Crucible Co.
Lunkenheimer Co.

Lumpers.
Gerry, George & Son.
Schofield, Wm. Co.

Machinery Dealers.
Fearon, E., Co.
Jefferson, Ed. & Bro.
Lamb, J. K., Textile Mach. Co.
Schofield, Geo. L.
Stead, Arthur
Taylor, James.

Machinists' Tools.
Curtis & Marble Machine Co.
McCabe, J. J.
Whiton, The D. E. Co.

Mails.
Walder, J.

Measuring and Folding Machines.
Elliott & Hall.
Fabric Measuring & Packaging Co.

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Boston Blower Co.
Buffalo Forge Co.
Massachusetts Fan Co.
Sturtevant, B. F., Co.

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Buffalo Forge Co.
Dean & Main.
Philadelphia Drying Machinery Co.
Sturtevant, B. F., Co.
Suck, Adolph.

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Home Bleach & Dye Works.
Lorrimer, Wm. H., Sons Co.
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Whiteley, William, & Sons, Ltd.

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Mill Builders and Engineers.
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Mill Supplies.
American Supply Co.
Bamford & Smith.
Barker, James.
Buckley's, Benj., Son., Gun Mill.
Crosby Steam Gage and Valve Co.
Dixon Lubricating Saddle Co.
Easton-Burnham Co.
Eureka Fire Hose Co.
Garland Mfg. Co.
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Leigh, Evan A.
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Morris & Co.
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Putnam & Co.
Rheinhauer, D. & Co.
Riley, C. E., & Co.
Richardson Bros.
Shaw, Victor, Ring Traveler Co.
Stephenson Mfg. Co.
Stoddard, Haserick, Richards & Co.
Thurston, A. G., & Son.
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Ward & Vandegrift.
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Parks & Woolsen Machinery Co.
Whiteley, William, & Sons, Ltd.

Noils (Silk).
Malcolm Mills Co.
Ryle, Wm., & Co.

Oil Cups.
Lunkenheimer Co.
Walworth Manufacturing Co.

Oil Filters.
Burt Manufacturing Co.

Oils.
Borne, Scrymser Co.
Murphy, E. W., & Co.
New York & New Jersey Lubricant Co.
Stephenson Mfg. Co.

Oil Hole Covers.
Tucker, W. W. & C. F.

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Cohoes Foundry & Machine Co.
Putnam & Co.

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Merrow Machine Co.
Willcox & Gibbs Sewing Machine Co.

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Standard Paint Co.

Pantagraphs for Mill Engraving.
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Smyth, J. L. N. Paper Co.

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Shryock, J. K.
Smyth, J. L. N. Paper Co.

Paper Box Machinery.
Beck, Chas. Paper Co., Ltd.
Langston, Samuel M.

Patent Solicitors.
Crosby & Gregory.
Howson & Howson.

Perforated Metals.
Allis-Chalmers Co.
Beckley, A. J., & Co.

Peroxide of Sodium.
Roessler & Hasslacher Chemical Co.

Pipes and Fittings.
Pancoast, Henry B., & Co.
Walworth Manufacturing Co.

Pneumatic Conveying.
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Power Transmission Machinery.
Allis-Chalmers Co.
American Drying Machinery Co.
American Mfg. Co.
American Pulley Co.
Cohoes Foundry & Machine Co.
Columbian Rope Co.
Evans, G. Frank.
Hunter, Jas., Machine Co.
Jeffrey Manufacturing Co.
Kilburn, Lincoln & Co.
Houghton, E. F., Co.
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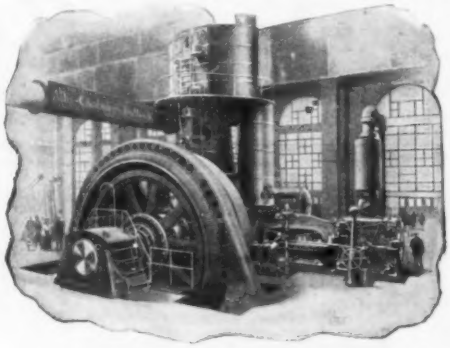

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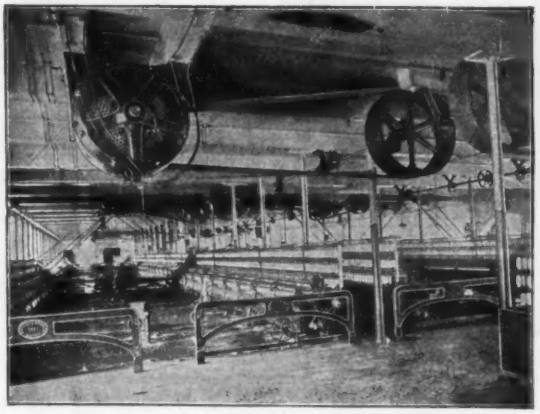

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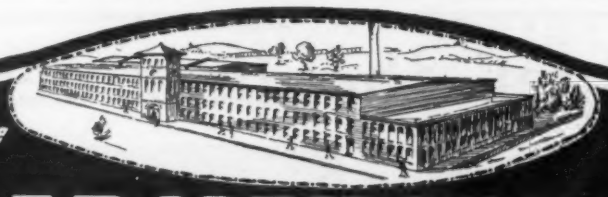

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SITUATIONS WANTED.

The following advertisements are a portion of those of superintendents and overseers of whom full particulars are on file at this office. Manufacturers who may be in need of such men may address them in care of Textile World Record, or state their requirements directly, and the addresses of suitable men will be furnished without charge.

Any paid-in-advance subscriber may have his name placed on the list of those desiring positions, upon filling out the requisite blanks, furnished upon request. Correspondence is confidential.

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Superintendent Cotton Mill open to a position. Age 33; American; married. Good experience as overseer of carding in large mill. Combed and carded hosiery yarns, shirting-, sheetings, cheviots; madras. First class references. 2096, Textile World Record.

Superintendent of broad silk mill wants position. Age 39; English; married. Worked on mostly plain goods. Could be of good service to some reliable concern just starting up. Has small plant of his own which he would put in as stock with a first-class concern. 3154, Textile World Record.

Superintendent. Would like position in South. Not particular about salary to start. Machinist and thoroughly acquainted with all kinds of card room machinery, also spinning frames. Taken superintendent course in textile school and has had 23 years of practical experience in the mill, mostly on fine yarn work. 3044, Textile World Record.

Cotton Mill Superintendent. Age 38; Scotch; married. All counts of American and Egyptian cotton from 10 to 60, twist and weft, warps, beams, and bundles and crape yarns, super quality. Familiar with Platt, Asa Lee, Howard & Bullough, Hetherington and Brooks & Doxey machinery. First-class references. 3042, Textile World Record.

Overseer of Cotton Carding. Age 32; married. Carded and combed yarn, fine and coarse, lenos, lawns, shirtings. English and American makes of machinery. References. 3025, Textile World Record.

Cotton Mill Superintendent, or assistant. Age 34; married. Worked on cotton machinery on coarse and medium numbers. Textile school education in designing, carding and spinning. 3002, Textile World Record.

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Superintendent or assistant. Leno, plain and fancy ginghams and sheetings. Wants place at once. 3162, Textile World Record.

Overseer or superintendent. American. Married. Ginghams, madras, cheviots, dress goods. Good experience and first-class character. 3164 Textile World Record.

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Superintendent. Has made yarn and shoddies and about everything in woolen line. Good general knowledge of woolen manufacture. Familiar with English, Belgium and American carding, spinning and preparatory machinery. 3088, Textile World Record.

Superintendent or assistant superintendent wants position. Age 31; American; married. Good experience on all kinds of goods, especially on union and satinets. Good references. Six years' experience in present place, five as overseer and one as superintendent. 3139, Textile World Record.

Superintendent or Designer. Age 37. English. Married. Experienced in this country and England. Worked on cloakings, suitings, coverts, broadcloths, etc. Mill closed, and wants place at once. Good references. 3140, Textile World Record.

Superintendent, manager or designer. Age 37; English; married. Worsted and woolen goods for men's wear and rain cloths. Worked in English mills, and has also been employed in this country. 3103, Textile World Record.

Superintendent, age 34; American; married. Worked on fancy woolens. Not employed, and can take position at once. Will not go to Canada or West or South. Would take a good boss spinner place or assistant superintendent, but wants over $4.00 per day. 3104, Textile World Record.

Superintendent or designer of small or medium sized mill. All kinds of fancy worsteds, cassimeres, cheviots, overcoatings and dress goods. Age 31; married; Scotch. 3076, Textile World Record.

Superintendent or boss weaver. 15 years' experience in worsted, woolen and silk goods. Graduate of Philadelphia Textile School. 32 years old; married. Good manager of help. American. 3119, Textile World Record.

Superintendent. Age 37; American; married. Woolen dress goods, fancy cassimeres, cloakings, etc. Will not go West, South or to Canada. First-class references. Graduate of Philadelphia Textile School, and also had good practical experience. 3126, Textile World Record.

Superintendent and designer, or assistant superintendent. Age 34; married. Worked on cloths ranging from all cotton to all wool and worsteds, such as cotton worsteds, jeans, army cloths, kerseys, etc. Excellent references. 3148, Textile World Record.

Superintendent and Designer. Age 30; American; married. Cotton warp, worsted and silk vestings, tapestry curtains, plaid backs, broadcloth, etc. 3146, Textile World Record.

Superintendent. Age 37; American; married. Woolen dress goods, fancy cassimeres, cloakings, etc. First-class references. Graduate of Philadelphia Textile School, and also 18 years' practical experience. 3126, Textile World Record.

A German Textile Technologist wishes a position as a weaving manager, calculator or designer. Has long practical experience in the best mills of Greiz, Gera, Meerane, Glauchau. Well acquainted with the latest fancy weaving machinery and the making of plain and fancy cloths. Thoroughly enterprising and of the highest character. Proposals awaited by Berthold Ziegenhorn, care of Rev. S. Keyl, 8 State St., New York.

COTTON CARDERS.

Overseer of Carding Room. Age 50; Scotch; married. Good experience, and excels on fine combed work. Wants N. E. States, or Southern. 3144, Textile World Record.

Carder in Cotton Mill. Coarse or fine, white or colored, hosiery, Egyptian, etc. Age 35; Canadian; married. 3029, Textile World Record.

Overseer of Carding. Large experience on all kinds of work and both English and American systems. Can furnish first-class references. Had charge of carding in some of the best New England mills. 3009, Textile World Record.

Overseer of Carding or cotton ring spinning. Worked on carded and combed Peelers, Egyptian, and Sea Island cottons, making yarns from 8 to 80. 3015, Textile World Record.

Overseer of Carding. Has held all positions in picker and card rooms. White and colored goods, 8s to 40s. 3070, Textile World Record.

Overseer of Carding Mill. All kinds of fine yarns. Started up two of the largest card rooms in New England. Considered an expert in the manufacture of combed yarns from the bale to the finished article. First-class recommendations. 1745, Textile World Rcord.

Overseer of Cotton Carding. Worked on all classes of cotton, carded and combed, in counts to 135s. Will not go West or South. 3061, Textile World Record.

Overseer of Carding or Ring Spinning. Age 35; American. Sheetings, prints and yarns, coarse and fine. Worked on most American machinery, but is more familiar with Lowell & Whitin. 1915, Textile World Record.

Overseer of Carding or Superintendent. Wide experience in large mills. Age 42; married. Finest of references. Will take large carding or superintendency. Familiar with all counts. 3133, Textile World Record.

Overseer or secondhand in preparatory department of long chain beaming, quilling, tape dressing, warping and spooling. A Scotchman; married. Will not go West or South. 3156, Textile World Record.

WOOLEN CARDERS.

Overseer for Washing, Carding or Combing wool for worsted wants to better himself. Speaks German, French and English. Best of references. 2093, Textile World Record.

Carder, or carder and spinner. German; married. Worked on all wool, wool and cotton, and shoddy mixes. Ten years' actual experience, and can furnish first-class recommendations. 2057, Textile World Record.

Overseer of Woolen Carding. Worked on all wool, wool and shoddy, wool, shoddy and noils. Wants $4 a day. Familiar with Davis & Furber, Furbush, Lombard and Rollette and Brown Patent. 3071, Textile World Record.

Overseer of Combing, washing, carding. Age 36, English, married. All classes of wool. Good experience and first-class recommendation. 3094, Textile World Record.

Overseer of Woolen Carding. Would accept secondhand position. All wool, cotton and wool, shoddies, mixes, worsteds. Does not wish for position on shoddy, but would consider one. Blankets, suitings, flannels. Understands spinning. 3093. Textile World Record.

Carder and Spinner. Been overseer 32 years, making every variety of cassimere, flannels, overcoatings, cloakings, dress goods, etc. Married; American. 3132, Textile World Record.

COTTON SPINNERS.

Overseer of Mule Spinning who has had a wide experience in large New England mills on yarns ranging from 24's to 160's is open to a position. 35 years old; American. Good references. 2003, Textile World Record.

Overseer Ring Spinning, or asst. superintendent. Sea Island combed from 6s to 30s, American from 6s to 50s; in fact, all grades of cotton, also expert on cable yarn. Prefers South, but will go anywhere. Wants $3.50 per day to begin with. 2020, Textile World Record.

Overseer of ring spinning, spooling, warping and dressing. Will not go South. Middle aged; American; married. Good experience and references. 3059, Textile World Record.

Boss Ring or Mule Spinner. Age 43; English; married. Asa Lee mules, Lowell Machine Shop, Platt, Mason mules; Howard & Bullough, Lowell and Mason frames. Yarns from 5's to 90's. 3001, Textile World Record.

Overseer of Cotton Mule Spinning. Understands Mason and English makes of mules. Has worked in mule room sixteen years, five years as second hand and a year and a half as overseer. 28 years old; married; steady and temperate. Would like to get work in N. E. or New York states. Has worked on colored hosiery yarn and filling. 1822, Textile World Record.

Overseer of Ring Spinning. Aged 42; American; married. Ginghams, sheetings, awnings, denims, etc.; $3 to $4 per day. 3018, Textile World Record.

Overseer Ring Spinning, spooling and warping wishes a position. A married man, with good experience. Worked on sheetings, shirtings, jeans, grain bags. 3152, Textile World Record.

Supt. of Cotton Mill, or overseer of mule or ring spinning is open to a position; 16 years' experience in Northern mills, on yarns, denims, awnings, apron checks, bicycle suitings, shirtings, etc., etc. Familiar with all well-known makes of cotton machinery; 29 years old; American; married. Can give references from large Massachusetts mills. 1527, Textile World Record.

Overseer of Cone Winding and spooling or ring spinning, who understands Universal, Foster, Broadbent and Payne winders, and Whitin and Mason frames, desires a position. Has worked on carded and combed yarns from 4's to 160's; also, mercerized, gassed and bleached yarns from 2 to 8 ply. Young man; American; married, and can give satisfactory references from large mills. 1960, Textile World Record.

Overseer of Spooling, warping, beaming, slashing and web drawing. Age 37; married. 3010, Textile World Record.

Overseer of Spinning. Age 34; married. Good experience. 20s to 90s Egyptian and American cotton. 3125, Textile World Record.

WOOLEN SPINNERS.

Roll Coverer wants an opening for work. Can cover cotton or worsted rolls, make aprons, or better, has had large experience. Can furnish tools. Work by piece or day. 1803, Textile World Record.

Superintendent woolen mill. Age 47; English; married. Wants New England or Middle States. 10 years' experience in first-class N. E. mills. 2028, Textile World Record.

Overseer of Warping, Spooling and Winding. Dress goods and cloth. Will not go to Canada. Aged 40; married. Good experience. References. 3027, Textile World Record.

Woolen Finisher. First-class. Familiar with all classes of goods and machinery. Can take full charge from loom to case. Has always been very successful. 1244, Textile World Record.

COTTON WEAVERS.

Overseer of Weaving or designer. Lawns, sheetings, twills, sateens, quilts, bedford cords, lappets. A young man; unmarried. Good experience and first-class recomendation. 3063, Textile World Record.

Overseer of Weaving. Englishman; 33 years of age; married. Worked on fine lawns, sheetings, sateens and fancies, coarse drills, twills, bicycle cloth, automobile cloth for tires. Familiar with Whitin, Crompton, Knowles, Mason, Kilburn & Lincoln and Lowell machines. 3073, Textile World Record.

Overseer Cotton Weaving. Plain and a variety of fancies, lenos, etc. Good experience. A young man; English; married. 3147, Textile World Record.

Overseer of plain cotton weaving. Age 27; American; married. Familiar with Whitin, Mason, Colvin and Draper looms. Worked on prints, sheetings, cambrics, lawns, twills, etc. 3143, Textile World Record.

Overseer of Weaving. Sheetings, sateens, ginghams, and dimities. Will not go South. 3116, Textile World Record.

Overseer of Weaving. Worked on sheetings, twills, sateens and fancies. Wants not less than $18 per week. 3157, Textile World Record.

Practical Boss Weaver and loom fixer wants position. Good and long experience. Good record for big production; good quality and for being a good manager of help, and the getting and keeping plenty of good hands. A sober and steady man. Will go anywhere. Either cotton, woolen or jute. 1806, Textile World Record.

WOOLEN WEAVERS.

Overseer of Weaving, also designer. Men's wear, woolen and worsted, and fancies of all kinds, cotton worsteds, dress goods. Knowles and Crompton looms. Age 35. 3056, Textile World Record.

Overseer of Weaving, or would take good second hand job. Age 42; married. Worked on dress goods, suitings, plaid backs, cloakings, meltons and other classes of goods. Worked on Crompton & Knowles loom. 3016, Textile World Record.

Boss Weaver or assistant superintendent Worked on all kinds of worsteds and woolens Crompton & Knowles looms. Wants place at once. Middle aged; English; married. Good experience. Excellent references. 3062, Textile World Record.

Boss Weaver. Aged 38; married. Cassimeres, beavers, kerseys, dress goods, flannels, blankets. Worked on Crompton & Knowles broad looms Good recommendation. 3066, Textile World Record

Overseer of Woolen Weaving, or would take a secondhand job. 35 years old; married. Familiar with Crompton & Knowles looms. Good references. 3089, Textile World Record.

Overseer of Weaving or designer. Age 29; American; married. Thibets, meltons, kerseys, worsteds and cotton worsteds. Crompton & Knowles looms. Good experience. First class recommendation. 2051, Textile World Record.

Superintendent of Weaving. Englishman; married. Worked on fancy worsted and cotton dress goods and men's wear. First-class recommendations. 3111, Textile World Record.

Boss Weaver wants position. Very wide experience. White and colored, plain and fancy. Understands all kinds of looms. 335, Textile World Record.

Overseer of Weaving. Worked on all kinds of fancy dress goods, cotton, worsted and woolen, also men's wear. Age 31; English; unmarried. 3159, Textile World Record.

DYERS.

Dyer, bleacher and washer. Age 30; American; married. Cotton print goods in either the roll or garment, long and short hose, raw stock and yarn, aniline or oxidized black on hosiery. Good references. 3081, Textile World Record.

Boss Dyer. Scotch; married. Good references. Bleaching, scouring, dyeing and carbonizing in roll or the garment. Raw stock, cotton or wool. Has worked on ginghams, elderdowns, knit goods. Will not go South or to Canada. 3149, Textile World Record.

Dyer or superintendent of dyeing and finishing. Age 34; English; married. Not less than $3.50 per day. All classes of woolen, worsted, mixed and cotton piece goods, bleaching, mercerizing. Can take charge from loom to case. 3121, Textile World Record.

Boss Dyer. A young man; married; American. Worked on wool, shoddy, cotton, silk noils, rags, camel's hair and piece dyes on satinets. Will accept $2 per day to start. 3122, Textile World Record.

Boss Dyer, mercerizer or bleacher. Scotch, married. Wool, yarns, piece, cotton and slubbing. Can take place at once. First-class recommendations. Familiar with all the latest improved machinery in the dyeing business. 3097, Textile World Record.

Boss Dyer. Twenty-six years' experience in all in woolen mills, 22 years being an overseer. Middle aged; American; married. Will not go South or to Canada. 3134, Textile World Record.

Dyer. Scotch; married. Cotton and wool skein and hosiery. Mercerizing and bleaching. Excellent references. 3141, Textile World Record.

Wanted, position as boss dyer and bleacher of cotton yarns, long and short chain and skein yarn. Good references. 3145, Textile World Record.

Superintendent of cotton bleachery is open to a position. Excellent experience. American; married; aged 37. Familiar with cambrics, sheetings, shirtings, lawns, sateens, drilling and fancy weaves. 3153, Textile World Record.

Fancy Dyer. Aged 37; American; married. Cotton, wool and silk. 3158, Textile World Record.

Overseer of Dyeing. Men's wear and dress goods, loose wool, piece dyes and yarns. Good experience. 3161, Textile World Record.

Dyer. Worked on piece dyes, wool, cotton, shoddy yarns, rags and union dyes and carbonizing. Wants place at once. Good experience and references. 3092, Textile World Record.

Boss Dyer and Bleacher. Age 34; English; married. Yarns, warps, knit goods. Can give good references. Wants $4 or more. 3020, Textile World Record.

Boss Dyer. German. Fifteen years' practical experience. Would like to go West or South. Worked on yarn, piece goods, raw stock, knit goods and hosiery. Can furnish references. 3045, Textile World Record.

Dyer. Scourer and Bleacher in knitting mill. Age 39; married. All grades of underwear, spring and latch needles. First-class recommendations. Will not go West or to Canada. 3004, Textile World Record.

Cotton Dyer, bleacher or chemist. Age 39. Drills, ducks, sateens, brocades, cotton trowserings, cambric handkerchiefs, sheetings, etc., also printing. Large experience on all classes of cotton goods 1966, Textile World Record.

Chemist or Colorist in cotton or linen print works. Age 37. His practical work includes calico printing and dyeing; dyeing, bleaching and carding of loose cotton; dyeing and finishing of cotton, linen, jute, yarn and pieces for linings; waterproofing of canvas. First-class references. 2084, Textile World Record.

FINISHERS.

Finisher and assistant superintendent wants position. Age 31; American; married. Good experience on all kinds of goods, especially on unions and satinets. Good references. Will not go West, South or to Canada. 3139, Textile World Record.

Boss Finisher. 25 years' experience on all classes of goods, woolen and worsted and cotton mixtures of all grades. 3142, Textile World Record.

Boss Finisher. American. Cheviots, cassimeres, beavers, dress goods, etc. Wants $2.50 to $3 per day. 3123, Textile World Record.

Woolen Finisher. Age 35; American; married; Wants $2.50 or $3.00 per day. Good experience. 3138, Textile World Record.

Overseer of Cloth Room. Age 37; American; married. Wants $18 per week or over. 3110, Textile World Record.

Overseer of Finishing. Age 33; American; married. Meltons, coverts, cheviots, flannels, mohairs, etc. Wants position in New England, preferably Rhode Island. 3129, Textile World Record, Boston.

Boss Finisher in a woolen mill. Worked on kerseys, meltons, cassimeres, satinets, cheviots, etc Wants $3.50 per day. Will not go to Canada or West. 3077, Textile World Record.

Foreman of cotton finishing room. Eight years' practical experience on napping machines, starching and calendering. Worked in mills in Italy and America. Married. 3155, Textile World Record.

Boss Finisher of underwear, cotton or wool mixed goods, who understands Wheeler & Wilson buttonhole machines, Union Button, Union Special, etc., is open to a position in the New England or Middle States. 30 years; American; married. Been employed for a number of years by concern for whom he is now working. Exceptionally good references. 1958, Textile World Record.

Foreman of Finishing room, folding, packing, etc. Age 49; married; American. Has had over 12 years' experience as foreman on white goods in one of the largest bleacheries in the country. First-class manager of help and capable of getting good results. 1870, Textile World Record.

Overseer Finishing from loom to case. Fine worsteds, cotton worsteds, cheviots, cassimeres, meltons, cotton and shoddy mixed. All kinds of face finished goods and piece dyes. Will not go West. Age 44. Married. American. Good experience. 1748, Textile World Record.

Overseer of Finishing. Age 32; American. Woolen and worsteds, suitings, coatings, cloakings, cassimeres, cheviots, meltons, frieze, etc. 2070 Textile World Record.

Finisher, both wet and dry. Age 28; English; married. Shirtings, ginghams, cotton dress goods, mercerized effects and men's cotton suitings and trouserings. Excellent references. 3007, Textile World Record.

Overseer of Finishing, worsted goods, white or fancy. A young man; married; English. Has had full charge of piece dye finishing. 3019, Textile World Record.

Boss Finisher. Worked on broad cloth, cheviots, kerseys, coverts, meltons, piece dyes, dress goods. Prefers Massachusetts, but will go anywhere in New England. Not employed and wants place at once. Young man; American. 3046, Textile World Record.

Cotton Finisher. Age 27. Worked on prints, lawns, dimities, muslins, ducks, drills, Madras, etc. Understands folding and packing. 3005, Textile World Record.

Second Hand in cloth room desires position. At present has charge of samples in large mill. Has worked on all classes of cotton goods. Strictly temperate. 3048, Textile World Record.

KNITTERS.

Knitter. Worked on light and heavy weight ladies' ribbed vests and shaped vests, and all kinds of common knit goods. Familiar with Champion, Nye & Tredick, Star, McMichael & Wildman machines. Wants work in Pennsylvania. 3037, Textile World Record.

Boss knitter, sewing machine fixer. Age 28; American. All classes of ladies' and children's knit underwear made on circular latch needle machines. Wants place at once. 3102, Textile World Record.

General Manager or superintendent of ribbed underwear mill. American; married. Been in underwear business eleven years as superintendent and manager. First-class references as to character and ability. 3100, Textile World Record.

Latch Needle Knitter on N. & T., S. & H., S. & W., McM. & W., Pepper, Lewis Jones, etc., circular machines. Twelve years' experience as boss knitter and superintendent. Wants steady work. Sober, good manager of help, best of references. 3106, Textile World Record.

Boss Knitter or fixer. Would like to work with boss finisher on sewing machines. American; age 32. Familiar with McMichael & Wildman, Nye & Tredick, Snyder & Fisher, Scott & Williams and other makes of latch needle machines, Tompkins spring needle machines, and understands winding. 3118, Textile World Record.

Overseer Boarding and finishing hosiery. All kinds of men's, women's and children's hosiery, except silk. Age 41; American; married. Can furnish references. 3035, Textile World Record.

Superintendent of knitting mill, or foreman in large plant, is open to position. Had some 15 years' experience as machinist, foreman and superintendent. Familiar with all grades seamless hosiery and most makes of seamless hosiery machinery. Understands business from starting new mills to finish. Perfectly sober and reliable. 3078, Textile World Record.

Position wanted in charge of boarding, pressing, pairing, folding of hosiery, etc. First-class references. 3105, Textile World Record.

Superintendent knitting mill. Cotton and wool hosiery, heavy mittens, sweaters, toques. Good experience. Aged 45; married. 1291, Textile World Record.

Knitting Fixer. A young man; American. Ribbed and seamless hosiery, cotton, lisle and Egyptian yarns. Familiar with McMichael & Wildman ribbers, Paxton & O'Neill and Branson 3/4 automatic and Hepworth loopers. Will not go South. 3130, Textile World Record.

Boss Knitter or Sewing Machine Fixer. German; married. Familiar with all makes of knitting and finishing machines on ladies' underwear. Will not go South or to Canada. 3128, Textile World Record.

Superintendent or Manager of large hosiery yarn mill will be open to a position shortly. American; married. Has manufactured in the South hosiery yarns in natural state, mixtures, silver grays, bleached and colored. Can refer to influential men. 1961, Textile World Record.

Fixer or Foreman. 27 years old. 11 years in the manufacturing and finishing department. Familiar with Excelsior, Scott & Williams, Brinton and Branson automatic, and Scott & Williams and McMichael & Wildman ribbers and Hepworth loopers, besides having a general knowledge of other hosiery machinery. Can give best of references as to steadiness, ability, character. 3024, Textile World Record.

Superintendent. All grades and weights of hosiery and ladies' ribbed underwear. Is familiar with Standard, Boss, Nye & Tredick and Branson machines. 598, Textile World Record.

Boss Knitter, finisher or machinist. Worked on nearly all kinds of knit goods, and nearly all kinds of latch needle knitting machines and all kinds of machines used in finishing underwear. 889, Textile World Record.

DESIGNERS.

Designer or superintendent. Age 37; English; married. Experienced in this country and England. Worked on clonkings, suitings, coverts, broadcloths, etc. Wants $30 to $40 per week. Mill closed, and wants place at once. Good references. 3140, Textile World Record.

Designer. A young man who has had eight years of practical experience in cotton designing wants position as designer or boss weaver. Worked on Marseilles, crochet and satin bed spreads, table covers, ginghams of all kinds, including leno, lappet and all classes of the above. Jacquard work a specialty. 3107, Textile World Record.

Assistant Designer or assistant superintendent. Young man; American. Men's wear, ladies' dress goods, shirtings, silk brocades, etc. Graduate of Philadelphia Textile School, and also has had short experience in mill. 3160, Textile World Record.

Designer or assistant. Worked on woolen and worsteds, cotton worsteds and mercerized goods. Good experience. A young man, single, Swede. 3127, Textile World Record.

Designer or superintendent. A German, 26 years of age. Dress goods and men's wear. Experienced in Germany and this country. 3163, Textile World Record.

Assistant Designer or assistant superintendent of woolen or worsted mill. A young man; American; unmarried. Men's wear, dress goods, silk brocades, damask, etc. 3160, Textile World Record.

Designer, assistant designer or assistant superintendent. German. Woolen and worsted men's wear and ladies' dress goods. Experienced in Germany and a short time in this country. 3166, Textile World Record.

Designer or Assistant Superintendent desires a position. 27 years old; Scotch; married. Familiar with all well known makes of machinery and with woolen, worsted and cotton goods. Good references. Will go to any part of the United States. Terms reasonable. 1996, Textile World Record.

Assistant Designer on woolen or worsted dress goods and suitings is open to a position. Age 21; American; single. A graduate of one of the largest textile schools in the country, and has had experience in a good New England mill. Also understands flannels and satinets. Good references. 1923, Textile World Record.

Smart Designer, high class worsteds and coatings and trouserings. Thorough experience leading factory. Now abroad; anxious to find employment in this country. Moderate start. 1816, Textile World Record.

Designer or assistant superintendent. Worsted dress goods, fancy cotton waistings, corduroys, worsted suitings. Wants place at once. Age 31; English; married. 3080, Textile World Record.

Designer. Plain satin, fancy leno, checks, colored and dainties in cotton. Wants $3.50 or over a day. 3043, Textile World Record.

Designer or Asst. Age 28; unmarried. Men's wear, woolens and worsteds. Prefers New England States. Thoroughly posted technically in all points, good on colors, calculations, etc. 3099, Textile World Record.

Designer, or assistant superintendent and designer. An A1 color designer. Can get up good line of fancy woolen and worsted goods which will be good sellers and profitable to the manufacturer. Graduate of a prominent designing and textile school in Germany. Is well posted on all kinds of stock, cotton and shoddy, and with the general work of a woolen mill. 1789, Textile World Record.

A First-Class Designer or superintendent desires position. Understands vestings, dress goods, silk labels, shoe facings, shoe straps, shirt labels and tapes of all descriptions. Large experience on Jacquard work. Age 26; single; English. Strictly temperate. 1773, Textile World Record.

MISCELLANEOUS.

Asst. Superintendent of dyeing, printing and finishing plant. Experienced in cotton and silk and capable of turning out finished product. American; 27 and married. Best of references. 3136, Textile World Record.

Second Boss or in advisory capacity for jacquard weaving. Familiar with almost every line of silk fabrics, also cotton backs, tapestry and upholstery goods, hammocks, table and bed covers, ribbons, etc. 3135, Textile World Record.

Loom Boss or asst. superintendent. All kinds of worsted goods for ladies' and gentlemen's wear and various classes of cotton goods. Worked in English mills and also in this country. 3151, Textile World Record.

Loom Boss. Age 32; American; married. Also a designer. Knowles, Crompton, Jacquard and dobby looms. Wants $3 per day. 3150, Textile World Record.

Machinist. French; married. Has had full charge of all kinds of repairing. Understands all about boilers, engines, motors and can give best of references. 3090, Textile World Record.

Traveling position with mill supply house. Has been dyer, but mill now closed. 3108, Textile World Record.

Overseer or second hand's position. Understands twisting, warping, spooling and cone winding. Worked on all kinds of cotton yarns. Will not go West or South. 3112, Textile World Record.

Master Mechanic in cotton mill. Wants $1,500 to $2,500 per year, according to duties and position. Can take place at once. Will not go to Western States or Canada. Familiar with steam engines, pumps, boilers, water wheels and complete cotton mill equipment. 3039, Textile World Record.

Overseer of dressing. American. Married. Wool, worsted and cotton worsteds. 3165, Textile World Record.

Master Mechanic wishes position in the North. 35 years old; married. Worked 15 years on repairs. Wants $3.50 per day. Has license for running engines and boilers. Understands all kinds of water wheels and care of same, dynamos and electric lights and also gas houses, and a good knowledge of building, all kinds of wood work and piping and blacksmithing. Understands cotton mill repairs as good as the best man at such work. 2025, Textile World Record.

An Expert on soap making and wool scouring will be open to a position shortly. Is familiar with the treatment of all grades. About 40 years old; English; married. Has worked for one concern in the United States for 12 years. 1980, Textile World Record.

Paymaster or Bookkeeper. Agent or Manager wood or iron working plant or small cotton mill. 23 years' experience. Expert accountant. Can take charge of all the office work in large factory or do all myself in small factory. Good references. Will go anywhere in New England or Middle States. 1881, Textile World Record.

A Second-class Engineer, 48 years of age, American, would like a position as such in a N. E. mill. Is steady and reliable. Good references from former employers. 1965, Textile World Record.

Foreman of Repair Shop. Age 30; American; married. Several years' experience in cotton mill repair work. Is familiar with almost any kind of machinery as far as repairs go.—Lowell Machine Shop, Hetherington, Kitson, Providence, Biddeford, etc. 2023, Textile World Record.

Salesman for hosiery an underwear. Age 37, single. Can furnish references. 3060, Textile World Record.

Master Mechanic, or mechanical superintendent. Many years' experience in general machine work and mill engineering. References. 3067, Textile World Record.

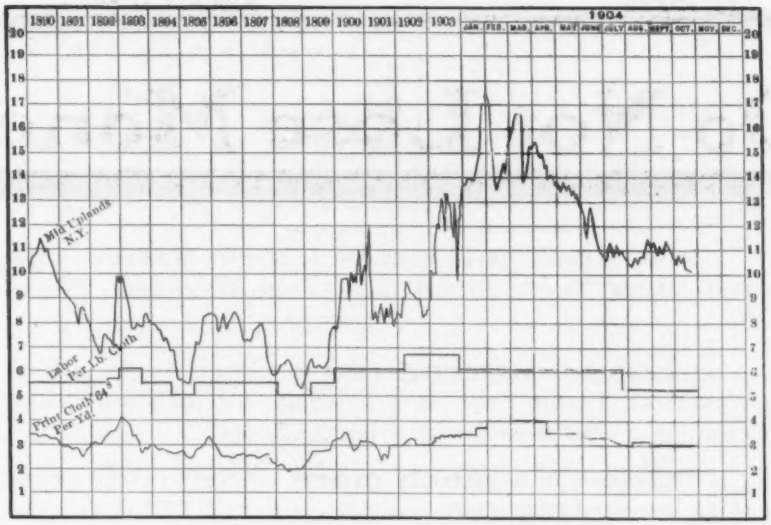

1890 1891 1892 1893 1894 1895 1896 1897 1898 1899 1900 1901 1902 1903 1904
JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT. OCT. NOV. DEC.
Mid Uplands N.Y.
Labor Per Lb. Cents
Print Cloth 64 x 64 Per Yd.

CHART SHOWING RANGE IN THE PRICE OF COTTON TO DATE.

The Cotton Market.

A glance at the chart shows that with the exception of 1895 and 1899, a pronounced decline has occurred in the cotton market at this season of the year for the past fifteen years. In both of the years which are the exceptions to this rule, the market was recovering from an abnormally low range of values. This periodical lowering of the market value of cotton is due to the receipt of the new crop, which begins to arrive in the market in large quantities in September. The amount of cotton which has come into sight from Sept. 1 to Oct. 21 of this year is in excess of that for any previous year. This may indicate a bumper crop or a strong desire on the part of spinners to get their storehouse filled with raw material before the speculators can catch them, as was done last year. The movement into sight from Sept. 1 to date named for each of the past six seasons is estimated by the Chronicle as follows:

From Sept. 1 to	
Oct. 21, 1904	2,955,496 bales
Oct. 21, 1903	2,123,306 bales
Oct. 24, 1902	2,773,932 bales
Oct. 25, 1901	2,367,876 bales
Oct. 26, 1900	2,711,418 bales
Oct. 27, 1899	2,631,484 bales

The total visible supply on Oct. 21 is estimated by the same authority at 2,717,665 bales, as compared with 2,137,206 bales on the same date in 1903; 2,504,061 bales in 1902; and 2,477,759 bales in 1901.

The weather has been very favorable for gathering the crop.

The cotton goods market is in a strong position. The curtailment of production during the past year has done much toward transferring the world's stock of cotton from the manufactured to the raw state, and buyers are showing a pronounced disposition to pay current rates for cotton goods, although any advance would doubtless reduce business at once.

Texas, Denison. St. Louis capitalists are reported as having investigated the Denison Cotton Mills, Texas, with view to purchasing same. This plant has been idle for some time.

C. M. BLAISDELL, Pres. and Treas. G. A. BLAISDELL, Vice Pres. and Sec'y.
Established 1860—Incorporated 1893.
THE S. BLAISDELL, JR., CO.,
COTTON, EGYPTIAN PERUVIAN
American Long Staple a Specialty. Shipments direct to mill from Egypt, Peru and all American Southern Points.
CHICOPEE, MASS.
Cotton Waste Purchased on Yearly Contract from Mills.

WEIMAR BROS. MANUFACTURERS OF Cotton Mercerized Tapes,
SPOOL TAPES, BINDINGS AND NARROW FABRICS FOR UNDERWEAR AND OTHER TRADES.
Phone Connections. Works, 2046-48 Amber Street. PHILADELPHIA, PA.

Do Not Lose Money

Be up to date. Read what Dr. J. Merritt Mathews of the Philadelphia Textile School, says about Wyandotte Textile Soda:

"I can give a **strong** recommendation for the use of Wyandotte Textile Soda as a substitute for soda ash in the scouring of wool from the following conditions:"

"It appears to be **much more** efficient in the removal of the greasy matters on the wool."

"It leaves the wool **much whiter** in color, not causing a yellowish stain as is the case with soda ash."

"It leaves the wool in a **much softer** condition, not feeling harsh and rough to the touch as when soda ash is used."

"It leaves the fibre much **freer** and **loftier** and **fluffier** having more life and resiliency in the wool."

"The use of Wyandotte Textile Soda does **not** require the use of as **much soap** in the scouring bath as when soda ash is employed, and hence it can be used to replace a considerable portion of this more expensive commodity."

None Genuine except with a card bearing this Trade Mark

in every package.

Write us for prices and further information.

The

J. B. Ford Co.,

Sole Mfrs.

Wyandotte, Mich.

You will be welcome at our Exhibit, Block 56, Aisle B, Agricultural Bldg., World's Fair, St. Louis.

None Genuine except with a card bearing this Trade Mark

in every package.

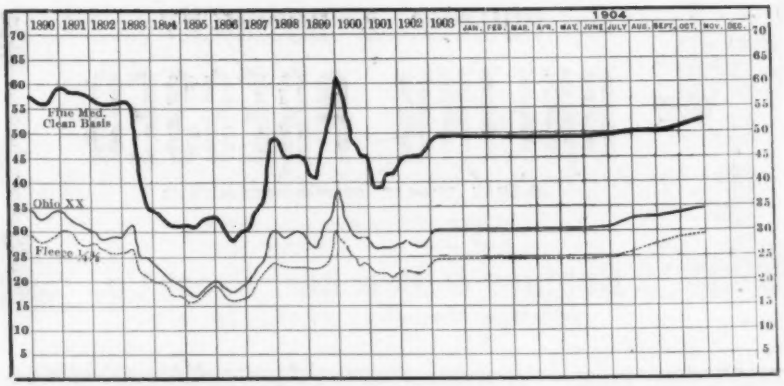


CHART SHOWING RANGES IN THE PRICE OF WOOL TO DATE.

Wool Market.

The consumption of wool in the United States is far beyond the home production. In 1896 and a few months before the first election of McKinley fine medium territory wool sold for 28 cents per pound clean. After the adoption of the protective tariff policy this grade of wool advanced like a rocket to 48 cents per pound. Previous to the passage of the Dingley bill, however, an immense quantity of foreign wool was brought into the country on speculation. These stocks bore heavily on domestic prices, which declined to a level of 42 cents for fine medium in the spring of 1899. At this level the wool was transferred from the possession of weak holders either to the mills or to those who could afford to wait for profits. The result of the rearrangement was the period of wild speculation which carried fine medium to 63 cents between Christmas and New Years of 1899. The rearrangement referred to did not destroy the wool, and, consequently, the law of supply and demand sent wool down to 38 cents in the spring and summer of 1901.

The wool trade lost heavily and speculators learned a lesson that many have not yet forgotten. Since that low mark in 1901, the course of prices has been regulated by normal conditions, and an annual consumption of 280,000,000 pounds of clean wool on a domestic supply of 125,000,000 pounds has rapidly reduced this large surplus until today the growing scarcity of wool in the domestic market has brought prices to a level of 55 cents for fine medium territory. Trade is active, desirable lots of wool are scarce. The wool market is thus in a theoretically strong position. The weak spot lies in the fact that the rise is due to a decreased supply and not to an increased demand. The demand, as has been often proved, can be supplied by wool substitutes, and dealers tempted to buy wool at present prices for a long pull would do well to bear this fact in mind.

Wool and Woolen Goods Made **NONSHRINKABLE** by the use of "Nevershrink Process."
May be applied at any stage of manufacturing. Write for Booklet.
CHARLES H. HEYER,
1501 Real Estate Trust Building, PHILADELPHIA, PA.

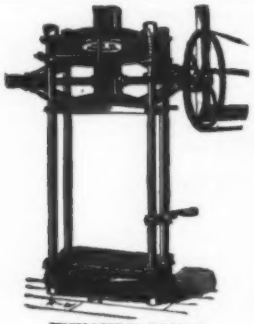
STANDARD QUALITY COMBED RAMIE TOPS and NOILS a Specialty. RAMIE YARNS in All Numbers for All Purposes

FRANK A. TIERNEY,
WOOL, TOPS, NOILS, YARNS,

Wool, Mohair, Camel Hair, Silk, and Ramie Tops and Noils. Woolen, Worsted, Mohair, Ramie, and Silk Knitting Yarns. All kinds of Yarn for Weaving Purposes.

Special Fibres and Novelties for Woolen, Cotton and Silk Manufacturers.

Room 203, Wool Exchange Building, 260 West Broadway, New York.



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BOOMER & BOSCHERT

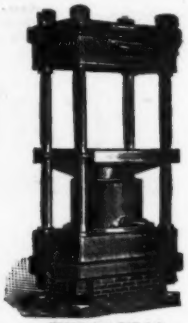
BALING PRESSES

ARE THE STANDARD

Hydraulic or Knuckle Joint
Any Size .. Any Power

Boomer & Boschert Press Co.

338 West Water St., SYRACUSE, N. Y.



HYDRAULIC.

EASTON AND BURNHAM MACHINE CO.,
Pawtucket, R.I.

ALL KINDS OF Spindles USED IN THE MANUFACTURE OF COTTON, WOOL & SILK

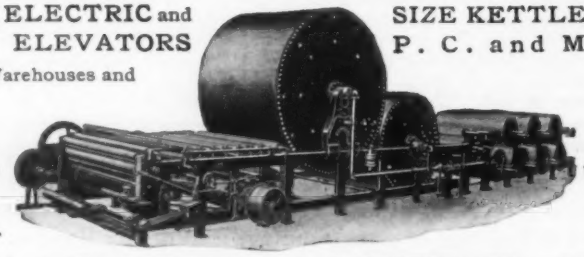
IMPROVED UPRIGHT SPOOLERS
TO SPOOL FROM COP, SKEIN, OR BOBBIN.

The COHOES SLASHER.

BELT-DRIVEN, ELECTRIC and HAND-POWER ELEVATORS
For Cotton Mills, Warehouses and Factories.

PULLEY BLOCKS.

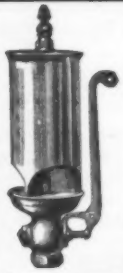
OVERHEAD TRACKS.



SIZE KETTLES. REPAIRS for P. C. and M. MULES and EMPIRE LOOMS

WATERWHEEL GOVERNORS.

The COHOES IRON FOUNDRY & MACHINE CO. Cohoes, N. Y.



For 25 YEARS We have held OUR REPUTATION as Progressive Manufacturers. Do not forget this when ordering GAGES.

ORIGINAL SINGLE BELL CHIME WHISTLE
Harmonious
Far Reaching
Pleasing.

A Truthful Gage is the only GOOD GAGE.

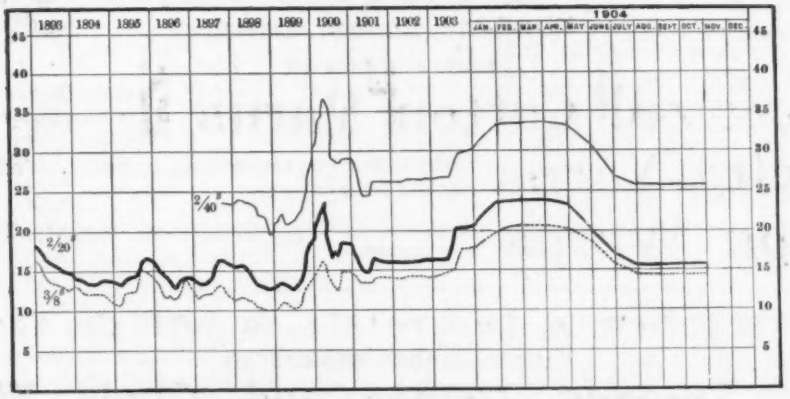
This Company manufactures, besides the above a large variety of articles used in connection with steam engines and boilers, all of which are standard quality, and may be relied upon. *Send for Catalogue.*

CROSBY STEAM GAGE & VALVE CO.

Stores: BOSTON, NEW YORK, CHICAGO, LONDON.

Office and Works: BOSTON, MASS.

Yarn Department.



GRAPHIC CHART SHOWING RANGE OF PRICE OF COTTON YARN TO DATE.

The Eastern Yarn Market.

The cotton yarn market is firm and fairly active, but business is restricted by the uncertainty regarding the course of the market for raw cotton. The decline of cotton to a 10 cent level, although it leaves the price at a comparatively high point, is used by buyers as an argument in favor of lower prices for yarn.

The spinners, however, point out that cotton at this time of year generally declines in price, and they claim the fact that it has not gone lower in the face of heavy receipts is a strong argument in favor of higher prices for yarn.

The spinners claim that the present quotations for cotton and cotton yarn mean a loss to them. Under these conditions they steadfastly decline to concede to the demands of buyers. Business is thus restricted to the immediate wants of weavers and knitters.

We quote as follows:

Eastern Cops.

6's	16¾
8's	17
10's	18½
14's	19½
16's	20
18's	20½
20's	21
22's	21½
24's	22
26's	23
30's	24½
34's	26
36's	26¾
40's	28

On cones, ¼c. more up to 14's; 1c. more from 15's to 22's; 1½c. from 23's to 35's, and 2c. above that.

Eastern Two-Ply Skeins, Carded Peeler.

12's	20
14's	21
18's	22
20's	23
24's	24
26's	24½
30's	26
36's	27
40's	29
45's	32
50's	36
55's	40
60's	44

Eastern Two-Ply Warps, Carded Peeler.

2/30's	27
2/36's	28
2/40's	29-30
2/45's	32
2/50's	37
2/60's	45

Egyptian Weaving Yarns.
Single Skeins Combed.

30's	34
35's	35
40's	37
45's	39
50's	43
55's	47
60's	50
70's	58

Two and Three Ply Skeins, Combed.

30's	36
36's	38
40's	40
45's	43
50's	46
55's	50
60's	54
70's	62

Carpet Yarns.

60-yd. double reel filling	25-26
No. 2 60-yd. double reel filling	23-24
1st quality 5/8	20½-21

THE J. R. MONTGOMERY CO.,

Windsor Locks, Conn.

MANUFACTURERS OF

Mercerized Cotton Yarns Gives the High Silk-Like Lustre in Knit Goods and Woven Fabrics.

Novelty Yarns Boucle, Bourette and Spirals, in Cotton, Wool, Worsted, Mohair and Silk.

Cotton Warps on Beams, Jack Spools and Tubes. In Fancy, Twist, Colors and Printed.

GREENE & DANIELS MFG. CO.,

COMBED, CARDED AND GASSED

Yarns, Threads, Twines and Chain Warps,

Colored and Bleached Yarns Furnished in any manner desired by the trade.

Pawtucket, R. I.

M. J. TOOHEY & CO., OF FALL RIVER, MASS.

Banding made from Egyptian or White Cotton Yarn as Desired.

The Other Fellows Banding.

MONUMENT MILLS,

Manufacturers of

White, Colored, Fancy and Double Twist

COTTON WARPS

HOUSATONIC, MASS.

4s to 60s.

Dana Warp Mills

WESTBROOK, ... MAINE

White and Colored Warps 6s to 50s Single and Ply

Mule Cops

From 30s to 50s from

American & Egyptian Cotton

2d quality ⅝	18-18½
60-yd. double reel cotton filling skeins	13
(on cops)	13½
120-yd. single reel cotton (on cops)	13-13½
Wool ingrains, 42-yd. common	6½-7
medium	8
best	10½-11
extra best	11½-12
light supers	15-18
Super jute, 42 yard	6¾-7
Super jute (light), 42 yard	7-7¼
Velvet wool, spun, 135 yds., white	29-30
Gray	28-29

Philadelphia Yarn Market.

There has been rather a scarcity of yarn the past few weeks, mostly due to the fact that cotton was so high during the latter part of September and the early part of October that spinning mills that had been shut down during August and September did not resume operations. The yarn market had been discounted to such an extent that there was a positive loss to spinners on cotton at the price at which the new crop opened.

Prices on yarns have advanced during the month, and cotton has declined, which has put things on a better working basis for spinners. Business has not been active, but there has been a fair demand for both weaving and knitting yarns. There are still some Southern mills running only part time, or shut down entirely. The action of the Southern Yarn Association has had the effect of strengthening prices, but with the recent decline in cotton, business will have to improve for the Association to maintain their present schedule. Prices are ruling about as follows:

Southern frame spun cones:—	
7's and Coarser	17
8's and 9's	17¼
10's	17½
12's	18
14's	18½
16's	19
18's	19½
20's	20
22's	20½
24's	21
26's	21½
30's	22
40's	25
50's	32
Southern high grade mule yarn:—	
Cones.	
10's	18½
12's	19
14's	19½
16's	20
18's	20½
20's and 22's	21-21½
24's	22
Southern frame yarn, lower grades:—	
6's and 8's	17
10's	17-17½

PAULSON, LINKROUM & CO.
Successors to BUCKINGHAM, PAULSON & CO.
Commission Merchants
COTTON YARNS of all Descriptions
83 Leonard St., NEW YORK
302 Chestnut St., Phila. 210 Munroe St., Chicago, Ill.
Cash Advances, Cash Sales and Prompt Returns. Consignments and correspondence solicited.

JAMES E. MITCHELL CO., COMMISSION MERCHANTS.
Cotton Yarns
FOR ALL PURPOSES.
122-124 Chestnut Street, PHILADELPHIA, PA.
Brown Building, 185 Summer Street, BOSTON, MASS.

CATLIN & CO.,
Cotton Yarns
345 Broadway, NEW YORK.
67 Chauncy Street, BOSTON.
206 Chestnut Street, PHILADELPHIA.
605 Medinah Temple, CHICAGO.

Harding, Whitman & Co.,
Dry Goods Commission Merchants,
COTTON AND WORSTED YARNS.
BOSTON. NEW YORK. PHILA.
CHICAGO. BALTIMORE. ST. LOUIS.

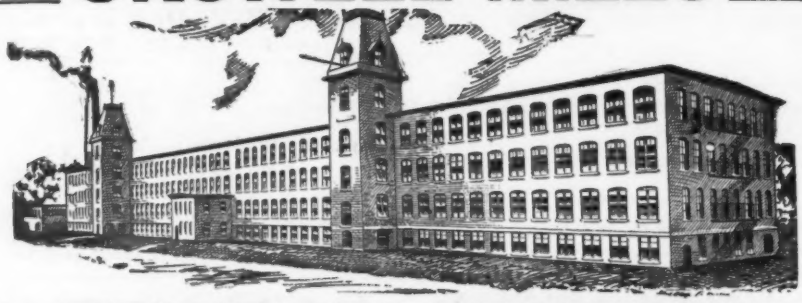
A. D. SALKELD & BRO.,
With FRED'K VIETOR & ACHELIS,
YARNS.
66-72 LEONARD STREET, - NEW YORK.

Fred Sternberg & Co.
530 Broadway, - NEW YORK.
MERCERIZED TURKEY RED GASSED } COTTON YARNS.

E. D. LORIMER & CO.
COTTON YARNS } ALL NUMBERS
MERCERIZED YARNS } FOR ALL PURPOSES
346 BROADWAY, NEW YORK.

MOELLER & LITTAUER,
SILK, WORSTED, WOOLEN YARNS COTTON AND MOHAIR
Polished Threads and Tinsel. Artificial or Wood Silk. Mercerized, Turkey-Red, Fine Gassed Yarns.
109 GREENE ST., NEW YORK

CAPACITY, 50,000 Spindles. **ORSWELL MILLS** FITCHBURG, MASS.



COMBED **COTTON YARNS** CARDED

In Chains and Skeins, on Balls, Beams, Spools—Single or Twisted.

THE MALCOLM MILLS CO.,

MANUFACTURERS OF

FANCY YARNS and POLISHED THREADS.

Offices: 229 Chestnut St., Philadelphia.

Mills: Frankford, Pa.

KROUT & FITE MANUFACTURING CO.,

Manufacturers of

Silk, Cotton and Mercerized Narrow Fabrics

Spool Tapes a Specialty.

Telephone Connection. Office and Mill, Allegheny Ave. and Emerald St., PHILADELPIA.

Walcott & Campbell Spinning Co.

Fancy Hosiery Yarns

IN ALL COLORS

New York Mills, Oneida Co., New York

DOULL MILLER CO.

75 Worth Street, New York

COTTON YARNS

Accounts Solicited

J. H. ENGLISH DEPARTMENT

Indian Orchard Company

Cotton Warps and Yarns. In Gray, and all Colors, Single or two or more Ply, and Cable Cord.

Novelty Yarns. in Various Patterns, Colors and Twists.

Carded and Colored Cotton. For Mixing with wool, Machined or in Roving.

F. Morgan, Pres. H. K. Wright, Treas. W. C. Godfrey, Agt.

Indian Orchard, Mass.

Eastern cones (high grade quality):—

10's	19
12's	19½
14's	20
16's	20½
18's	21
20's and 22's	21½-22

Skein yarn (mostly Southern):—

4's to 8's soft	16
10's to 12's	17-17¼
14's to 20's	17½-19½
22's	20
14/2	18
16/2	18½
20/2	20
30/2	22½
40/2	28
16/3 slack	18½
12/3 slack	17¾
8/3 carpet	17
8/3 slack	17
9/4 slack	17

Warps (mostly Southern):—

10's to 12's	17-17¼
14's	17½
16's	18
20's to 22's	19½-20
26's	21
14/2	18½
16/2	19
20/2	20½
24/2	21½
30/2	23
40/2	28½

Mixed colored yarns (mock twist, half colors):—

6's to 10's	18-18½
12's to 14's	19-20
16's to 18's	20½-21

Silver and jaeger, 1½c. over white.

Mock Egyptian, 2c. advance over white.

Egyptian, 4c. to 5c. above best quality white.

Worsted Yarn.

Spinners continue busy with orders secured earlier in the season, but the end of these orders is in sight and the task of getting orders at a greatly advanced price is the problem before the spinners. Prices, especially on quarter blood yarn, have been advanced materially. The advance over last February is 12 to 14 cents per pound and quarter blood yarn is selling as high as half blood grade; if there is a difference it is not more than 5 cents per pound. The prices spinners quote vary from 5 to 10 cents per pound on the same grade of yarn, the spinner who bought his wool before the advance being willing to sell for less than the spinner who must buy on the market. A very singular transaction occurred which well illustrates this peculiar situation.

A certain weaver made an offer of, say, 72 cents for a quarter blood yarn and before the order had

TRY OUR
Silkine, also Lisle Silk
FINISH
—FOR—
Hosiery, Knit Goods, Yarn, Fast Black, Harsh Colors, and Fibres.
O. K. SOAP CO., 968 Franklin St., PHILA.

LINEN YARN IMPORTER.
HUGHES FAWCETT, 115 Franklin Street, NEW YORK.
Flax, Hemp and Jute Line and Tow Yarns, For Weaving Purposes.
Linen Jacquard Harness Twines, Fine Cotton Harness and Heddle Twines, For Cotton, Silk, Woolen and Carpet Manufacturers.
Correspondence solicited. Samples promptly furnished.

Mercerized and Plain
Skein, Warps, Cones, Cops, Tubes
COTTON YARNS
426 and 428 Market St., Phila.
Theo. H. Strouse & Co.

Ballou Yarn Co.
PROVIDENCE, R. I.
Harness and Seine Twines and other Job Gassing, Winding, etc. All Numbers.
GASSED.·.YARN.·.SPECIALTIES

American Cotton Yarn Exchange
COMBED and CARDED COTTON YARNS
From Northern and Southern Mills.
American, Egyptian, Peruvian and Sea Islands.
ARNOLD B. SANFORD, Pres. and Gen. Mgr.
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OFFICES: 67 Chauncy St., Boston.
240 Chestnut St., Philadelphia.
108 Franklin St., N. Y. with James Talcott.

F. C. BARTON
MANUFACTURER OF LILY BRAND NARROW FABRICS
RIBBONS, TAPES, BINDINGS & NON ELASTIC WEBBINGS
54 FRANKLIN STREET, NEW YORK

ALLEGHENY WORSTED MILLS,

Thomas Wolstenho'me Sons & Co.,
MANFRS. OF
ALL NUMBERS
SINGLE AND TWO-PLY,
On Cop or in Skein, for Weaving and Knitting Purposes, in White, Natural and Fancy Mixes.

Worsted
YARNS
Sell Direct,
Office and Mills, Frankford Ave. and Westmoreland St., Phila, Pa.

Pocasset Worsted Company,

WORSTED YARNS
IN THE GRAY.

Mills at
Thornton, R. I.

Office
100 Boylston St., Boston, Mass.

CRANSTON WORSTED MILLS.

Worsted and Mohair Yarns—White or colors, in skeins, on spools, cones, or shuttle bobbins.

Novelty Yarns—of Mohair and Worsted. We are the only manufacturers in the United States making these yarns from the raw material to finished product and making yarns only.

Genapped Yarns of all kinds. Doup Yarns. Harness Yarns. For Braids, etc.

DYERS OF YARN AND SLUBBING. BRISTOL, R. I.

French System. Bradford System.

B. F. BOYER CO.,

MANUFACTURERS OF

WORSTED AND WOOLEN YARNS,

Office and Mill, Delaware and Cooper Streets. CAMDEN, N. J.

Woolen and Merino YARNS

Eaton Rapids Woolen Mills,
EATON RAPIDS, MICH.

EDDY & STREET,

Cotton, Woolen,
Worsted, Spun Silk.

Yarns and Braids

PROVIDENCE, R. I.

RICHARD CAMPION,

SELLING AGENT FOR

Bristol Worsted Mills,
Highland Worsted Mills,
Loridan Worsted Co.,

17 Bank St., PHILADELPHIA, PA.

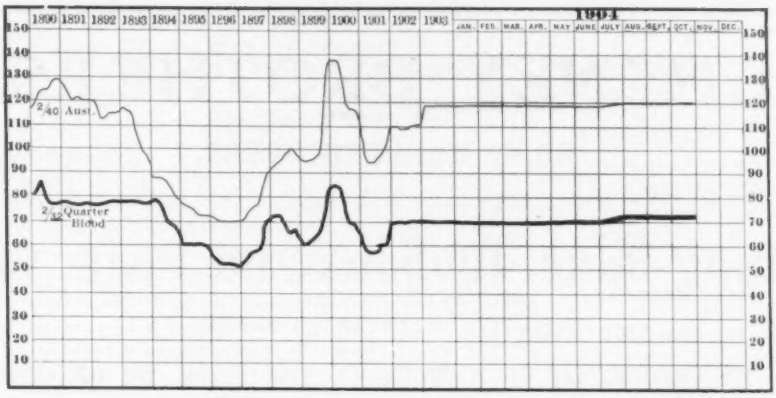
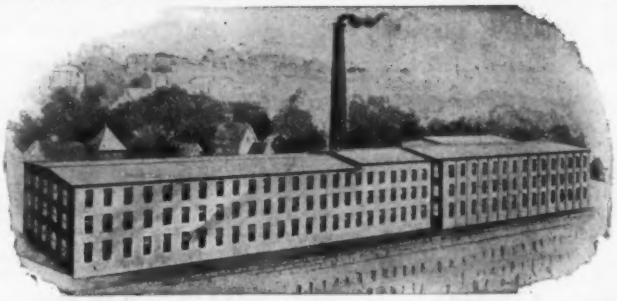


CHART SHOWING RANGES OF PRICE OF WORSTED YARNS.

fairly been forwarded withdrew it as he was able to buy the yarn of another spinner for 70 cents per pound. In the meantime the salesman who had received the 72-cent offer received a telegram from his spinner, saying that 75 cents was the lowest at which he would sell. The result of all this is that the weavers are getting off on the half blood grades, leaving the quarter blood quality alone. The weavers claim that this excessive advance means that after a while spinners will be forced to lower prices if they are to receive any orders. We heard of a weaver who intended to make a line of samples for his heavy weight season out of quarter blood yarn, but when the difference in the price between the quarter and half blood yarn was shown him, he reconsidered the matter and made them entirely of the half blood grade. The idea is that if the cloth made from quarter blood yarn is put on the market at prevailing prices for yarn, the price for the cloth, as compared with last year, will seem excessive. If a better grade is offered of a finer quality (like a half blood), and offered at practically the same price as the quarter blood cloth, the sales and trade will go to the better grade.

Said one very large commission merchant: "We must use half blood grades. It matters not about the talk of a harsh feel being necessary." It is an undoubted fact that orders for a comparatively limited quantity have been placed at an advance

SILK NOILS AND SILK NOIL YARNS
In White and Colors.
A. T. SKERRY & CO., 47 Leonard Street, NEW YORK.
MOHAIR LOOPS, KNOTS AND FANCY YARNS FOR DRESS GOODS & CLOAKINGS.

QUEENSBURY MILLS WORCESTER MASS.
MOHAIR TOPS AND YARNS FOR WEAVING
LUSTRE YARNS FOR SERGE LININGS
ALPACA YARNS

SPINNERS OF MOHAIR YARNS FOR ZIBELINES
DRESS GOODS YARNS
KNITTING YARNS
WORSTED YARNS
MOHAIR

CHENEY BROTHERS,

SILK MANUFACTURERS,

——ALL KINDS OF——

Knitting Silks, Ribbons and Piece Goods

USED FOR TRIMMING KNIT GOODS.

TRAMS, ORGANZINES and SPUN SILKS, IN THE HANK, OR ON CONES, FOR MANUFACTURERS' USE. SILK FOR SPECIAL PURPOSES MADE TO ORDER.

Mills: SOUTH MANCHESTER and HARTFORD, CONN.

SALESROOMS:

477, 479 and 481 Broome Street, NEW YORK.
929 Chestnut Street, PHILADELPHIA.
79 Chauncy Street, BOSTON.
239 Fifth Avenue, CHICAGO.

WILLIAM RYLE & CO.,

Foreign and Domestic

Spun Silk Yarns and Noils.

Domestic Thrown Silk of every description. Fine Pure Dye Silks for the woolen trade a specialty. Importers of European and Asiatic Raw Silk.

54 Howard St., cor. Mercer St., NEW YORK.

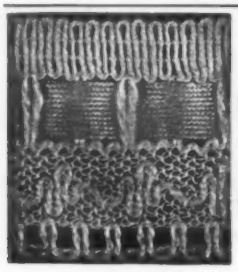
SAUQUOIT SILK MFG. CO.,

INSULATING AND BRAIDING SILKS.

ORGANZINE, TRAM & HOSIERY SILKS.

Fast Dye Organzines for Woolen Manufacturers a Specialty.

Mills: Bethlehem, Pa., Phila., Pa., Scranton, Pa. New York Representatives, Wm. Ryle & Co., 54 Howard St.—Phila. Office, 4015 Clarissa St., Nicetown.—Chicago Office, 210 Monroe St.—Boston Office, 78 Chauncy St.



GEORGE W. CHAPIN,

BRAIDS Cotton, Worsted, Mercerized, Cotton and Silk Twilled. TAPES Common, Twilled, Superfine and Plain 13 to 35s, white and colors on spools.

YARNS Cops, Skeins, Warps, Tubes and Cones. THREADS on Spools, Tubes, Cones, Unbleached, Bleached and Colors for Manufacturers' use.

CROCHET LACE EDGINGS Latest Styles in Point Laces.

229 Church Street 231 . . PHILADELPHIA

all the way from 6 to 10 cents per pound, but it is noticed that there are many salesmen trying to secure orders for spinners, and while some orders are placed the buying is mostly for grades other than quarter blood quality.

The demand for clay worsteds is beginning to be felt and is increasing. There is also a continued demand for rain cloth yarns 1/28s worsted twisted with 1/80s combed Sea Island. At one time the demand for this class of yarn was great, but the ordering was overdone. The cloth became a glut on the market, the business was lost in a night and all orders cancelled. This trade is beginning to revive for the better grades of raincoatings and there is now a continued demand for yarn at prices higher than before.

The weavers are using much double and twist cotton yarn for mercerized effects without the mercerized cotton and there will be much of this class of yarn on the market.

The high price of yarn tempted some weavers to lighten up the cloth so as to produce same at a profit and yet meet the buyers' ideas of value.

It seems that the buyers found this out and now many of the mills have been forced to allow yardage. In one instance the yardage on a piece of cloth amounted to 5 yards.

The French system spinners are busy and are securing many orders from weavers as they are offering yarn at lower prices than the English system spinners. Many orders for knitting yarn were taken early in the season and show the French spinners a loss as compared with what they could do on the present market. Some hosiery knitters placed orders last July. These manufacturers have orders placed with spinners at very low prices and as usual the low priced orders get the least consideration. Later we may look for much dissatisfaction at late and in some instances non delivery of yarn.

Some of the knitters using worsted yarn did not try to secure orders and will not until after election, when prices are liable to be a stiff proposition to the buyers. Whether they will balk at the prices is what is bothering the knitters.

Top combers continue busy without many orders ahead as prices are well maintained and no chance for lower prices at present. Trade has been good.

We quote as follows:

2/40's Australian	1.20
2/40's XX Delaine	1.10
2/40's Half Blood	1.05
2/20's Half Blood	.85
2/36's ⅜ Blood	.75
2/26's ¼ Blood	.68

Pennsylvania, Schuylkill Haven. An addition is being built to the bleaching plant of the Union Knitting Mills.

JENCKES SPINNING CO.,
Formerly E. JENCKES MFG. CO.
Carded and Combed Cotton Yarns for Weavers and Knitters.
Double and Twist Yarns for Woolen Trade.
PAWTUCKET, R. I.

WILLIAM B. CHARLES,
Cotton Yarns,
Cotton Cloth,
Silesia, Sateens,
For the Underwear Trade.
AMSTERDAM, N. Y.

GRANT YARN CO.,
COMBED AND CARDED COTTON.
YARNS 40's and above. AND
FITCHBURG, MASS. WARPS

FLOSSETTE MILLS
of the
New England Thread Co.
CENTRAL FALLS, - - R. I.
(DYERS and BLEACHERS) and MANUFACTURERS of
High Class Threads on Tubes, Spools and Cones and MERCERIZED YARNS for Knitting.
GLAZING OF YARNS
For the Shoe Lace. TAPE and WEBBING TRADE.

C. MOORE & CO.,
Manufacturers of
TWINES, THREADS AND YARNS,
Jacquard Harness Twines of all kind on hand and made to order.
S.W. Cor. Fifth and Market Sts., Phila.

Knitting and Weaving YARNS.
Cones, Cops, Warps, Skeins,
Single, Double, Three-Ply, etc.
Peeler, Egyptian, Mixed Colors.
Large Assortment.
EDWARD S. HYDE,
226 CHESTNUT STREET,
Philadelphia, Pa.

What's the Use

of buying three or four times as much oil as is actually used for lubrication? For every drop of fluid oil which is **worn out** in reducing friction between bearing surfaces, at least three other drops either never reach the bearing in the first place, or else run through it into the goods and the floors.

The use of **NON-FLUID OILS** means free insurance against mill stains on goods, a substantial decrease in the oil bill, and — last but not least — no increase in the coal bill.

A postal will bring free testing samples by paid express.

NEW YORK & NEW JERSEY LUBRICANT CO.,
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JOSEPH M. ADAMS CO.
WOOLEN YARNS,
Carpet Backing and Rug Yarns a Specialty.
ARCOLA MILLS,
Main St., foot of Centre St., Manayunk, Phila.

Woolen and Merino Yarns,
1 to 10 Runs, at reasonable prices.
All Wool, Mohair and Wool Spun or Mixed Cotton and Shoddy Yarns, in white, gray, and colors.
Dress Goods Yarns a Specialty.
E. M. ROCKWELL, - - LEOMINSTER, MASS.

E. C. HARPER,
WORSTED and WOOLEN YARNS,
MERCERIZED COTTON,
395 BROADWAY, TEL. 1929 FRANKLIN NEW YORK.

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WORSTED and WOOLEN
YARNS
A SPECIALTY.
ALSO TOPS.
170 SUMMER ST., BOSTON.
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SUMMER STREET.
ANDREW J. SOLIS, Jr. & CO.

HOFFMAN, DeWITT & McDONOUGH,
Manufacturers of
Diamond Stay Bindings TRADE MARK
Tapes, Webbing and Bindings.
COTTMAN and G STS., PHILADELPHIA
Ryer's Station, P. & R. R. R.
Bell Telephone, 203 Cheltenham.

Woolen Yarn.

Spinners continue busy, but the weaving trade is giving them no support; when the heavy weight season opens the demand for yarn will increase greatly. Weavers anticipate buying much outside yarn, but with the present uncertainty as to what will be used in heavy weights they are unwilling to take chances in ordering yarn or placing much spinning machinery, much as they dislike to see their machinery space get away from them. The knitters in the meantime are engaging the spinning machinery away from the weavers. It is early for them to do this, but business is rushing and they are securing the pick of the machinery early. When later the weavers want yarn spun it will be a proposition for them to secure the machinery space.

The hosiery manufacturers have been placing orders for future requirements in merino yarn; underwear knitters have also been buyers to a considerable extent, as well as the rubber boot knitters on the cheaper grades of yarn. There is a good demand for 2-ply woolen yarn from the weavers to imitate worsted yarn and thereby meet the required prices for cloth. The dress goods manufacturers are buying much yarn to take the place of worsted yarn and some good orders have been secured. Prices for yarns are higher and buyers are trying to get them at old prices.

Throughout New York State the knitters continue busy, but will place no large orders until after election, the buying being only for immediate requirements. This class of trade does not realize that prices have materially advanced and seek to buy at the old values. This not being possible, they try to hold off. Much thread waste will be used the coming season, the knitters say, if it ca.. be secured, but the fact is there is very little fine domestic thread waste to offer, as the worsted spinners have been running on quarter blood stock. Hence the knitters are buying imported threads at prices which range from 61 to 65 cents per pound.

The coming season will call for much Australian lambs' wool. Buyers will be cautious as the coming clip is liable to produce wool of a coarser fibre caused by the crossing of Vermont stock with the Australian, and also because of the abundance of feed after the drought. This is to be a serious feature of the coming Australian wool clip.

Black wool continues high, prices ranging from 70 to 72 1/2 cents per pound for No. 1 black wool.

The fine wool will be purchased shortly, as the trend of the trade is toward the use of finer qualities. After the election many orders will be placed and the chances are that the highest prices of the

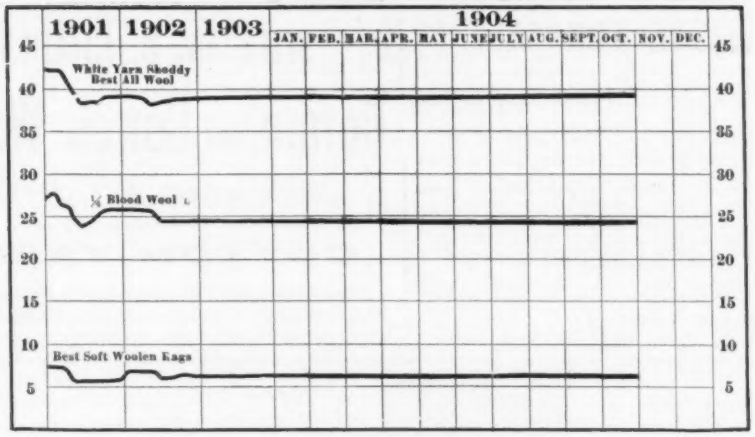

CHART SHOWING RANGE OF PRICES OF SHODDY, RAGS AND NOIL.

year will be reached on fine domestic wool, although we look for an easing off on the Australian grades, with the exception of thread waste, which is also scarce in Europe.

Sale yarn is fairly good, but better results are looked for next month.

Black tops are scarce and later the prices will be much higher.

Rag and Shoddy Market.

The demand for shoddy is moderate and confined to actual requirements. Manufacturers are in doubt as to what class of goods will be called for next season and are therefore unable to make contracts for future delivery of raw material. Rag dealers ask higher prices, but manufacturers are unable to concede the advance. This is restricting business within narrow limits. It is not likely that business will become active until after the heavy weight situation has become known. Rag dealers report slow collections and are not at all inclined to make concessions of price.

In wool waste and flocks there is a scarcity of desirable goods. Dealers could get a great deal more business if it were possible to secure the material from the mills.

SHODDIES AND EXTRACTS.

White yarn, best all wool	38-40
White knit, all wool, best, fine	28-32
White knit, No. 2	23-25
Light yarn, extra fine	25-28
New pure indigo blue	23-25

Merino.

Fine light, all wool, No. 1	24-25
Medium light, all wool, No. 1	16½-17½
Medium light, all wool, No. 2	14-16
Fine black, all wool	20-22
Fine dark, all wool, best grade	20-21
Medium dark, all wool, No. 1	13-15
Medium dark, all wool, No. 2	12-13
Red knit stock, strictly all wool	19-20
Red flannel, all wool	19-20
Dark blue for hosiery, strictly all wool, No. 1	17-20
Dark blue for hosiery, not all wool, No. 2	12-14

DELAINE EXTRACTS.

Light	19-22
Medium light	15-17

WOOLEN RAGS.

Regular gray	12-13
Black	14-15
Fancy colors	16-20
Fine merchant tailors, all colors	9-11
Choice light colors	13-15
Browns	12-13
Blacks	9½-10½
Fine blues, plain	9-11
Fine dark	10-11
Medium dark	7-8

Worsteds.

Blue	16-18
Black	18-20

Serges.

New black	15-16
New blue	14-15

Flannels.

New scarlet	18½-22
New blue	17-18
Cloakings	3-4

SOFTS AND KNIT STOCK.

Soft woolens, best	7-7½
Old white flannels	14-16
White flannels, No. 2	11-12
Old red flannels	9½-10
Light blue flannels	7½-9
Old blue flannels	6-7
Fine worsted, new black	26
New blue clip, best, fine	20-22
Dark mixed yarn, extra fine	22-24
All wool yarn, medium and coarse grades	15-20
Old plaids	5-7
White stockings	17-18

WOOL WASTE FOR SALE.

No. 41,390. About 20,000 pounds. Greyish brown mix. Fine medium quality, good staple.
No. 41,391. About 10,000 pounds. Straight black. Medium coarse, fair staple.
No. 41,392. About 8,000 pounds. Coarse dark brown mix. Short staple.
No. 30,163. About 60,000 pounds. Medium quality, good staple, dark brown mix.
No. 30,234. About 175 bags. Black. This is medium quality, good staple.

All the above lots are quite clean and dry, except the last number, which consists of about 70% of scoured wool card waste, and about 30% of unscoured. It also contains a small percentage of fast black cotton.
No. 30,163 shows about 25% of cotton. All other lots are supposed to be all wool. Samples sent on application.

Address Dept. 7.
CHAS. W. BECKER, Agent, AMSTERDAM, N. Y.

WILLIAM B. CHARLES,
Cotton and Cotton Wastes
Amsterdam, N. Y., U. S. A.

COTTON YARNS.

Contracts made with Cotton and Woolen Mills for Yearly Waste Production. Correspondence solicited. Shepperson's Code, 1878. Cable Address "Charles."

White hood stock	20-21
Clear hoods	9-10
Red stockings	9-10
Blue stockings	7-8
Fancy stockings, No. 1	7-9
Gray stockings	9-10
Black stockings	9-10
Knit stock comforters	6-7½
Red knit	9-10
Light gray knit	9-10
New light fancies	16-18
New fancies	12-14

Merinos.

Light, fine	13½-15
Light, coarse	7½-8
Fine, dark	12-13
Dark, No. 2	8-9
Coarse dark	5-6
Blue	12-13
Blue-seamed	13-14
Black—unseamed	12-13
New black	18-20
Small	3¼-4
Printing	6-8

FLOCKS.

Shear, fine white, all wool	9-11
Fine indigo blue, all wool	9-9½
Fine black, and blue, all wool	7-8
Fine dark, all wool	5-6
Gig, fine, all wool	3-4
No. 1, black, all wool cut	6-7
All wool, fancy, shear and gig	2½-3½

COTTON WASTE.

No. 1 Spinners	9⅜-9½
No. 1 Machine	7-7½
No. 2 Machine	5½-6¼
Machine Cop	8-8¼
No. 1 Cop	9-9½
No. 1 Card	8½-9
No. 2 Card	7¾-8
No. 1 Oily Card	4¼-4½
No. 2 Oily Card	3½-3¾
Egyptian Card	Limited quantity
Peeler Combing	10¼-10½
Egyptian Combing	Limited quantity
No. 1 Linters	5¾-6¼
No. 2 Linters	5-5½
White Clips	8-8½
Colored Clips	5-6
No. 1 Picker	2-3½

You Save Enough Insurance to Pay for the Equipment.

So it costs you NOTHING to have the AMERICAN WATCHMAN'S CLOCK. Fully approved by all insurance companies. We equip factories with Fire Alarms, Signals, etc., also Employee's Time Recorders, and Telephone Systems. Electric Time System consists of Master Regulator in office with secondary electric clocks throughout the mill, insuring accurate time. Send for particulars.

Pettes & Randall Co., 150 Nassau St., New York

Twenty Per Cent. Dividend.

Some branches of the cotton business are good, if we may judge from the announcement of dividend of 20 per cent. by the Coats Thread Combination of Scotland and America. At its annual meeting, October 27th, it was stated that the profits for the year were about $12,500,000.

Texas, Waco. L. C. Todd, vice-president of the Waxahachie Cotton Mills, is reported as interested in organizing a company with capital stock of $400,000 or $500,000 to build a cotton mill at this place.

*Washington, Bellingham. The Washington Silk Company is now operating two looms on novelties. After the holidays they propose taking up line of dress goods.

SOUTHERN and WESTERN MILLS!

Why not have your yarn dyed in the West saving time and freight? **Prompt attention guaranteed.**

PHŒNIX STEAM DYE HOUSE,
12-18 Southport Ave., - - CHICAGO
Cotton Yarns a Specialty.

W. W. TUPPER & CO., GRATE BARS
For Any Kind of Fuel.

Rocking Grates—Dumping Grates.
24 State Street, - - - - - New York City.

KNITTING MILL NEWS.

*Maine, Brunswick. The new mill to be started here will be operated by Messrs. Cobb & Stetson.

*North Carolina, Rocky Mount. Work will start shortly on erection of new building for the Rocky Mount Hosiery Co., recently incorporated with capital stock of $100,000. They expect to have the plant running in either January or February on misses' hosiery. J. C. Braswell is president and treasurer of the company, and Geo. T. Andrews, superintendent.

Ontario, Dunville. The Coupe Manufacturing Company is a new concern recently incorporated with capital stock of $20,000 to manufacture sweaters, lumbermen's socks, toques, golf and ladies' vests. They will start operations November 1, with equipment of 33 knitting and 8 sewing machines. H. A. Coupe is president of the company, W. A. Davis, agent, and W. J. Brennan, superintendent. Goods will be dyed at the mill.

*Ontario, Toronto Junction. The mill previously reported under the head of Streetsville, Ont., as likely to be constructed, will be built at once. Plans have been prepared and work of building will soon be commenced. A company will probably be formed, in which Mr. Peter Ryan will be interested. Some time ago he purchased knitting machinery of Virginia Textile Company of Lynchburg, Va., which will be installed in the new plant. The building will be one story, 250 by 50. The name and style of the concern has not yet been decided. Capacity will be about 150 to 200 dozen per day of men's underwear. F. W. Herington will be the manager. Practically all the necessary equipment is on hand.

Pennsylvania, Bethlehem. Charles F. Hendricks is president of the Philadelphia Hosiery Co., Inc., with a capital of $10,000. Samuel Graham is treasurer and George D. Dobbins buyer for the company. They make misses' cotton ribbed hosiery, operating 65 latch needle machines and 15 loopers.

*Pennsylvania, Lebanon. The report under Scranton that Wm. Kehl & Son had begun preparations to start a knitting plant, refers to the Hawk Knitting Co., in which Mr. Kehl is interested. This company will start a branch plant on the 17th, in third floor of the Lebanon Textile Building, where they will start with 40 knitting machines, 5 ribbers and 4 loopers, making men's half hose. The finishing will be done at the main plant at Reading, where all business will also be contracted.

Pennsylvania, Philadelphia. The American Knitting Machine Co., 167 Oxford St., H. E. Ashmore, general manager, is starting a factory for the manufacture of hosiery, which is expected to be in operation about the 15th of October. It will have an equipment of from 100 to 125 latest improved Victor machines. The output of the plant is under contract for the coming year.

*South Carolina, Walhalla. It is expected that the Oconee Knitting Mills will be in operation by October 10th, making misses' and children's hosiery.

SHODDY WM. H. H. SLACK & BRO., Springfield, Vt.

Carbonized Stock a Specialty. **FLOCKS**

M. B. SCHWAB, Pres. H. RAWITSER, Treas.
ED. GLUECK, Sec. and Gen. Mgr.

RIVERDALE WOOLEN CO., MANUFACTURERS OF

.. Shoddies ..

Of every description. Capacity 7,000,000 pounds per annum.
Custom Carbonizing and Garnetting a Speciality.

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In Textile Mills

Warren's Pulley Cover

is the best and most economical belt slipping preventative. It is used by many of the best mills in the United States.

Any careful man can apply it.

Sufficient for 40 sq. ft., $5; 125 sq. ft., $12.
If your supply house does not sell it, order direct.

The Warren Co., Mfrs., 25 E. Chicago Ave., Chicago, Ill.

SOUTHERN Factory Locations

Portions of ten States, comprising the Richest and most Progressive sections of the Cotton Territory of the South, are traversed by the lines of the

SOUTHERN RAILWAY

and

MOBILE & OHIO R. R.

In these sections are offered superior locations for Cotton Mills, Woolen Mills, Knitting Mills, Cotton Seed Oil Mills, and various other enterprises.

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Southern Railway,
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or
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Manufacturers of

MERCERIZED YARNS

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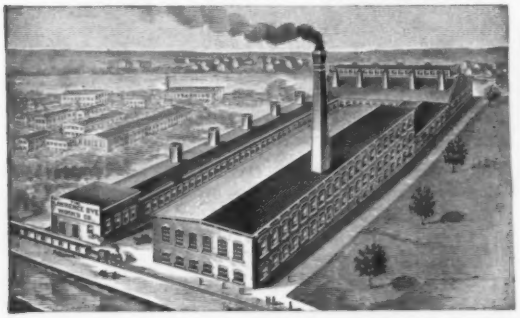
THE LAWRENCE DYE WORKS COMPANY

LAWRENCE, MASS.



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Dealers in Colored Cotton Yarns.

Re-Dyers and Re-Finishers of Worsteds and Woolens.

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DYERS, BLEACHERS AND **MERCERIZERS**

OF COTTON WARPS AND SKEIN YARNS.

Globe Bleach and Dye Works,
Oxford and Worth Sts., Frankford, Pa.

140 Chestnut Street, PHILADELPHIA.

We are Dyers of all kinds of YARNS Cotton AND Warps

We are sure we can give you better work and better service that you can get elsewhere. A trial will convince.

T. BROPHY'S SONS, Jasper St., above Clearfield St., - PHILADELPHIA, PA.

WE DO BLEACHING and DYEING

ESPECIALLY FOR THE **KNIT GOODS TRADE**

YARNS BLEACHED AND DYED (delivered on cones)
CONE WINDING FOR THE TRADE.

Schuylkill Haven Bleach and Dye Works, SAMUEL ROWLAND, **Schuylkill Haven, Pa.**

N. B. Bleached Finishing Yarns on Cones for Underwear, always in Stock.

INCRAHAMVILLE DYE WORKS,

Dyers and Bleachers of Cotton Yarns in long or Short Chain Warps and Skein, in FAST COLORS, FOR BLEACHING PURPOSES, Cross Dyeing, Ginghams, Etc.

Also Dyers of Turkey Reds and Indigo Blues for all purposes in either Warp or Skein.

Telephone. PAWTUCKET, R. I.

FIRTH & FOSTER CO.,

Dyers and Finishers of Dress Goods, Men's Wear and Cloakings, such as Venetians, Armures, Soleils, Crepons, also Silk Warp Fabrics, Cotton Warp Linings, Suitings, Clays, Serges, Worsted Damasks, Tapestries and Shirtings.

Particular attention given to Fast Colors on Cotton and Worsted Yarns, Slubbing and Stock Dyeing. Special Black for the Silk Trade on Fine Cotton Yarns.

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OF ALL CLASSES OF LINEN GOODS.
Toweling and Damasks a Specialty.

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Does the Best Bleaching at the Most Reasonable Rates?

TURKISH TOWELS, SKEIN YARN, TAPE, UNDERWEAR.

Send us a sample, we will show results and quote prices.

2560-62-64 N. Third St., Philadelphia.

MARYLAND BLEACH AND DYE WORKS,

BALTIMORE, MD.

BLEACHING, DYEING and MERCERIZING of all grades of Cotton Yarn,

GUARANTEED FAST COLORS.

Direct, Sulphur and Oxidized Black, Fast and Stainless Colors on Merino Yarn. Fast Milling and Alizarine Colors on Wool.

TUBING: Universal and Foster: CONING.

Prompt and Careful Attention Given to all Orders.

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Fast Black Dye Works

HOSIERY DYEING A SPECIALTY.

1929 to 1939 E. Westmoreland St., Philadelphia.

JOHN BOSTON, Proprietor.

SAVOGRAN

Cleans Wool, Floors, Anything.

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NICETOWN MFG. CO.,

4303-09 No. 18th Street, Philadelphia.

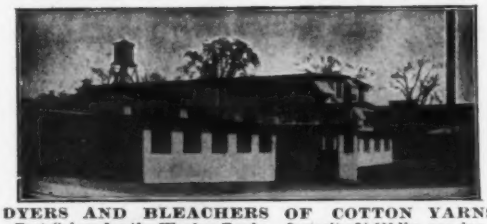
MILL SOAPS

OF EVERY DESCRIPTION. ALSO LAUNDRY SOAPS.
ALL GOODS GUARANTEED.

Established 1881.

Peter B. McManus, Prest. and Treas. — Peter B. McManus, Jr., Asst. Treas. — Edw. J. McCaughey, Sec'y.

HOME BLEACH and DYE WORKS, Inc.,



DYERS AND BLEACHERS OF COTTON YARNS
Fast Colors for the Woolen Trade. Capacity 20,000 lbs. per day.

Office and Works, Pawtucket, R. I.

Pawtucket Dyeing and Bleaching Co.

Bleachers and Dyers of COTTON YARNS and STOCKINET

Office with Blodgett & Orswell Co., Manufacturers of Glazed Yarns.

232 Front St., Pawtucket, R. I.

Established 1848. Telephone Connection.

JAMES J. TULLY,

Manufacturer of

Fulling and Scouring Soaps

179-181 Master Street,

MILL SOAPS a Specialty. PHILADELPHIA.

H. A. Metz & Co.,

122 Hudson Street,

NEW YORK, N. Y.

Thiogene Black M Conc.

Strong—Fast—Cheap.

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Charlotte, N. C.
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Chicago, Ill.
San Francisco, Cal.
Montreal, Canada.
Toronto, Canada.
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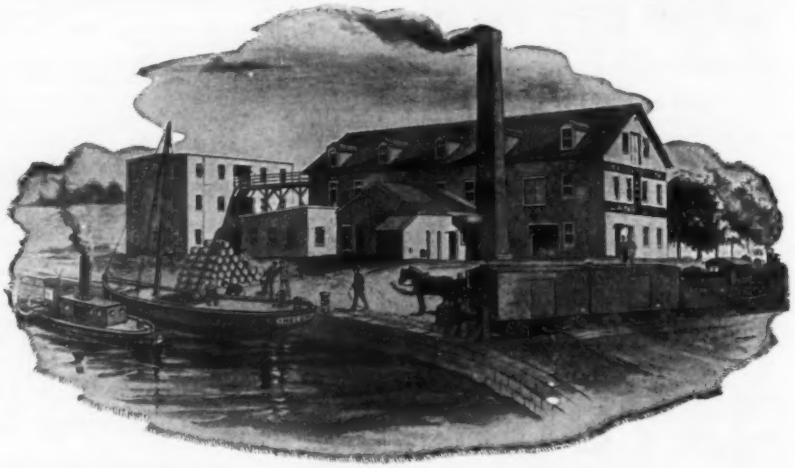
Laboratories: NEWARK, N. J.

"The dyeing with sulphur colors on cotton is found to be greatly improved in respect to fullness and brightness of shade by the addition of Turkey Red Oil to the dye bath."



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B. & L. ANTI-CHLORINE (ultra bleaching process.)
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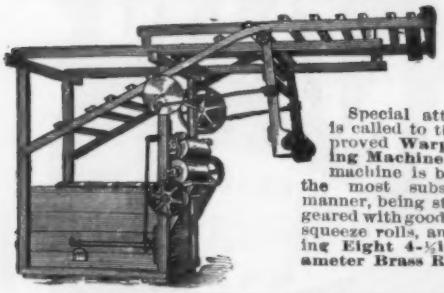

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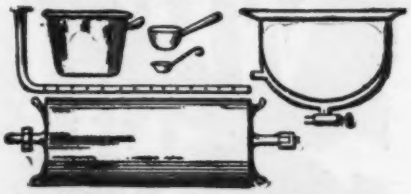

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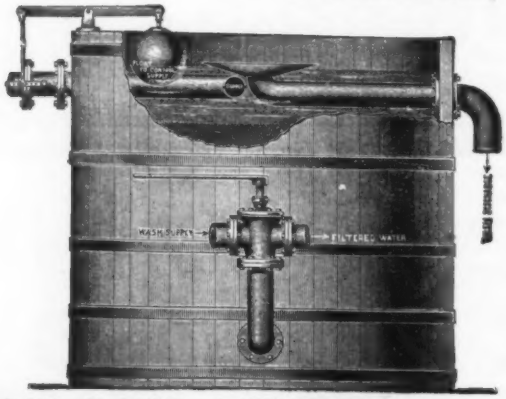

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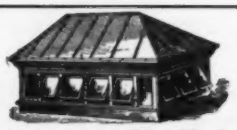

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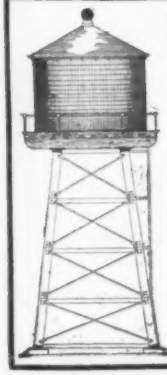

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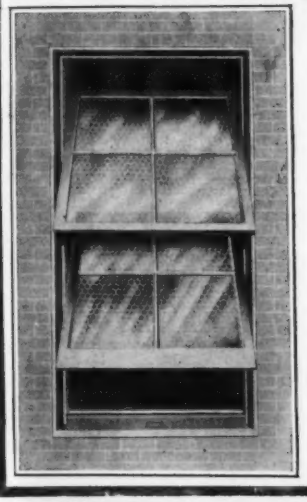

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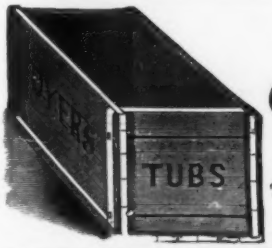

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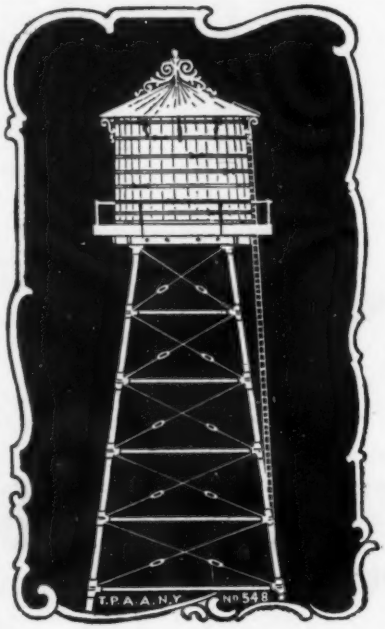

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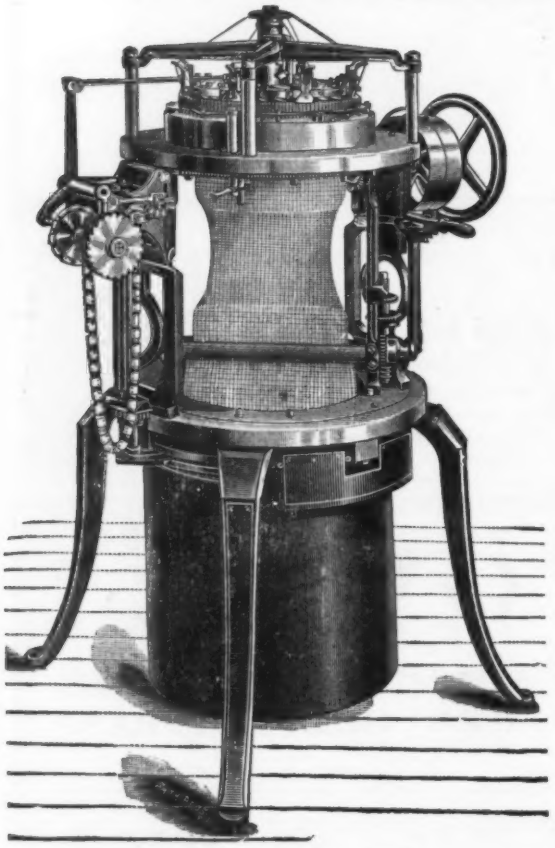

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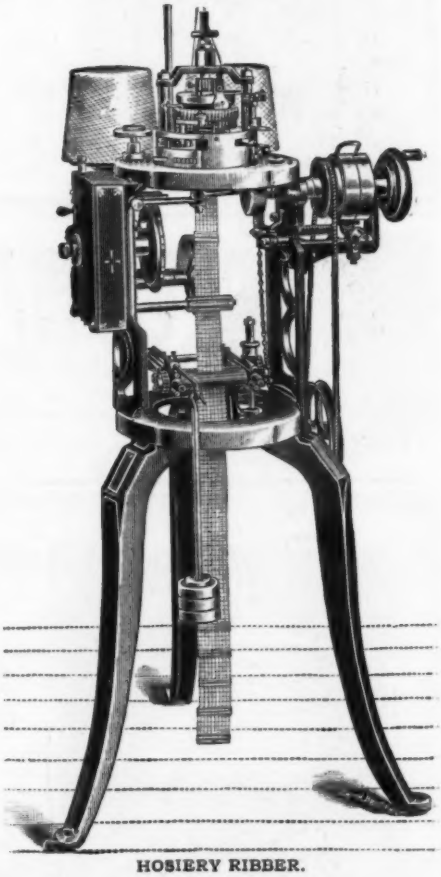

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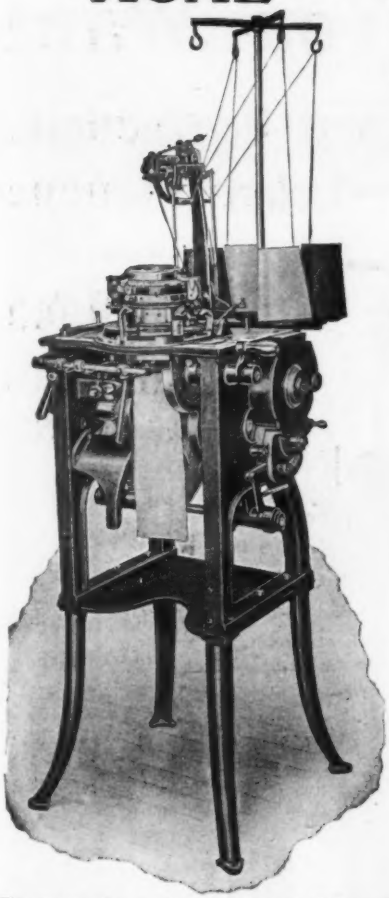

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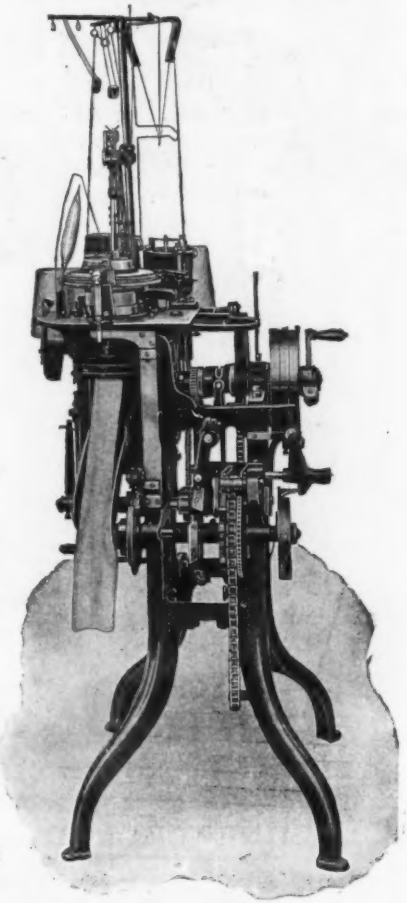

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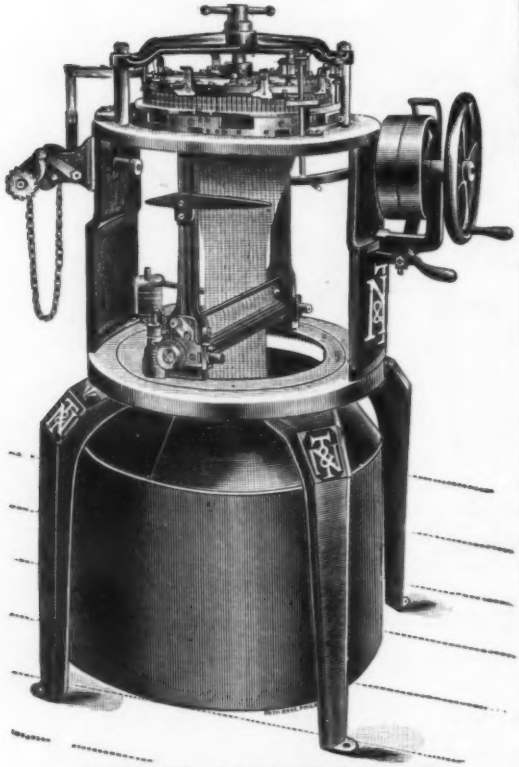

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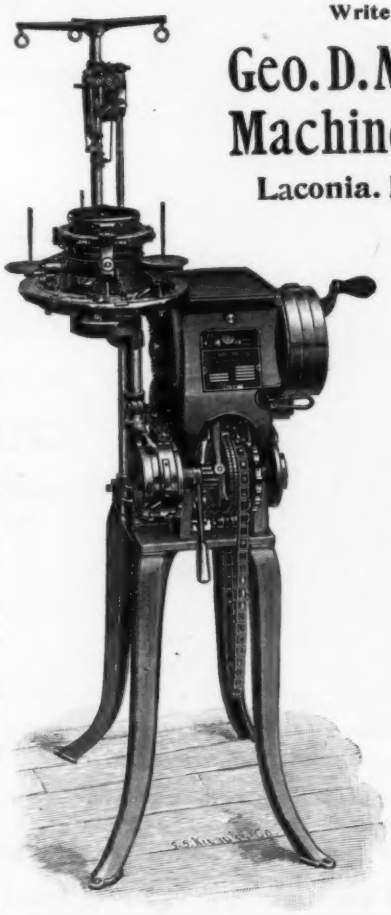

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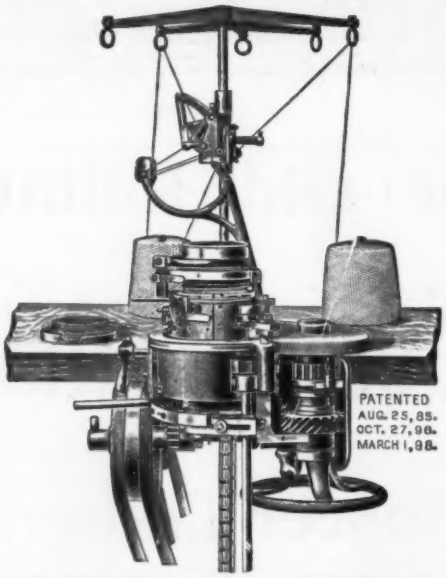

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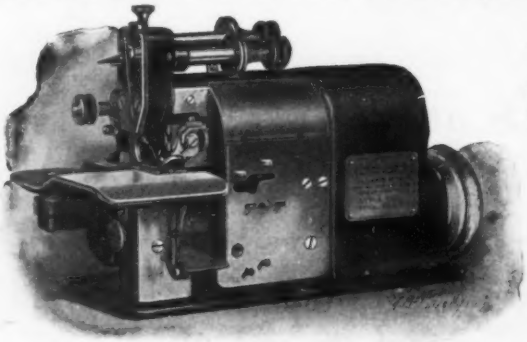

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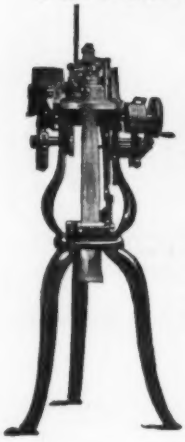

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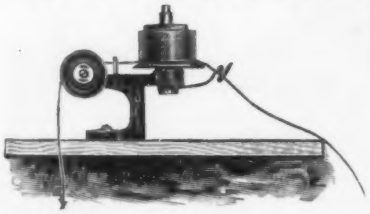

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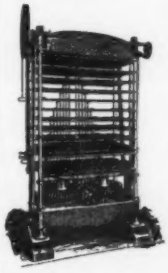

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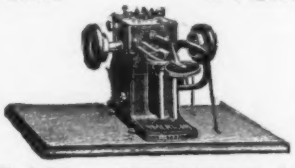

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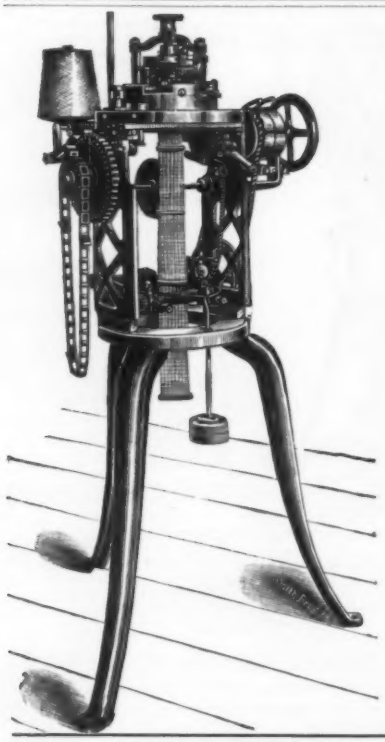

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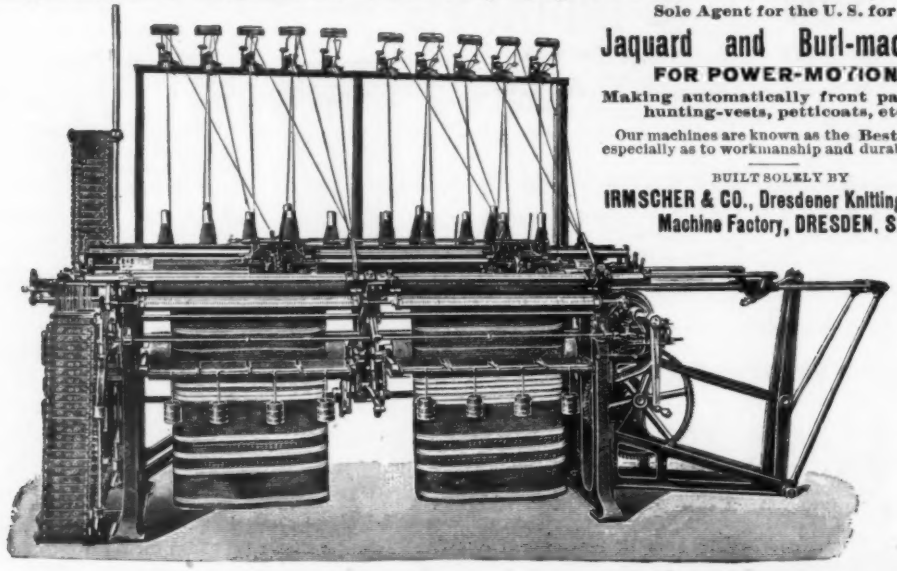
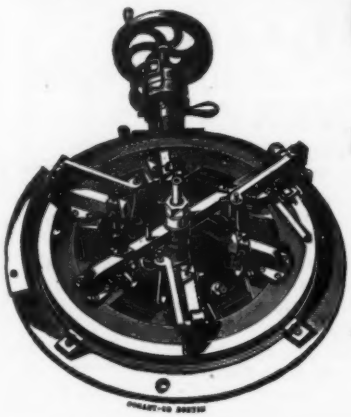
IRMSCHER & CO., Dresdener Knitting Machine Factory, DRESDEN, SAXONY



SWEATERS.—This machine is built with 1 or two sections which work together (dependently of each-other) and produces all patterns which could be made hitherto on Hand-Jaquard- and Burl-machines automatically in endless pieces with dividing thread. We are ready to wait on with collection of same which will be the best recommendation, and here we will mention but to following advantage of this machine which is constructed very geniously: It is provided with autom. racking-apparatus as far as 6 needles, special cams for double rib, autom. change of all middle and wing-cams, 2 thread-carriers, autom. change of colors, special attachment for locking in the loops and electric stop-motion in case of yarn-breaking, knots, etc.

All these apparatus are set to work by the pattern-chain, consisting of a number of Jaquard-cards. This new arrangement which is our invention enables the knitter to put together any pattern, making the necessary cards by means of a stamp and after a table we subjoin.

Special Hand and Power Machinery for Fancy Gloves, Sweaters, Golf Hose, Ladies' Blouses, Etc.



CIRCULAR KNITTING MACHINES

Either plain or full automatic, with stop motions complete, for

Ribbed Underwear, Sweaters, Cardigans, Cuffs and Anklets.

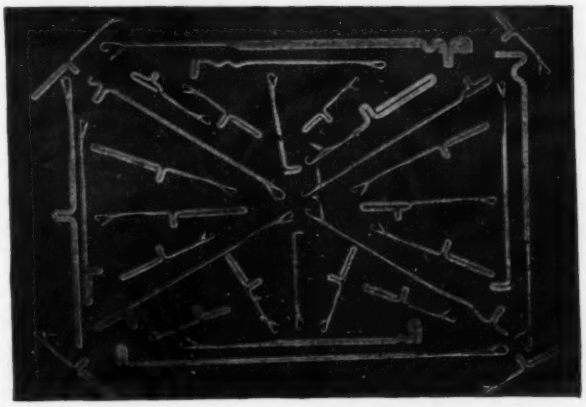
The Leighton Circular Machines are the only ones which **Rack** or **Shog** the needles for fancy borders; also built for automatic striping; and with from 4 to 16 feeds for underwear.

Also Builders of ABEL WINDERS, SEAMERS and LOOPERS.

LEIGHTON MACHINE CO.,
Manchester, N. H.

Latch Needles

For all Knitting Machines.



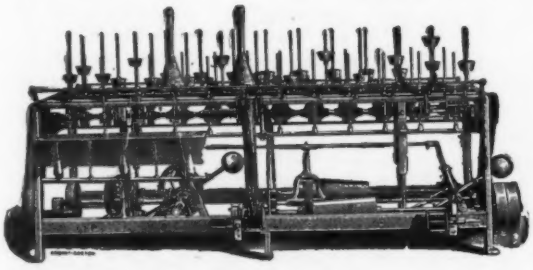
Our Superior or Sunken Rivet Head Needles

Will save you money every day in the year.

Dodge Needle Co., Manchester, N.H.

We now build, with or without differential motion, for winding on Bobbins from Skein or Cop,

THE ABEL WINDERS



ALSO THE

Abel Seamers and Loopers

IN CONNECTION WITH OUR LINE OF

AUTOMATIC RIB KNITTING MACHINERY.

LEIGHTON MACHINE CO., Manchester, N. H.

JAMES TAYLOR,

835 Arch Street, - - - Philadelphia, Penn.

KNITTING MACHINERY

OF ALL KINDS. NEW AND SECOND HAND.

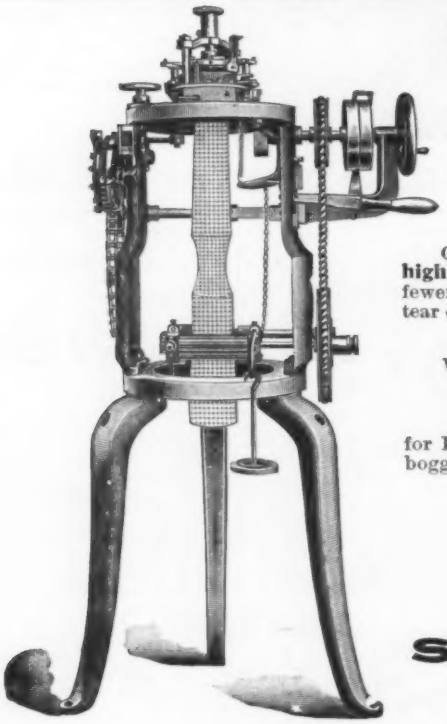
A RARE OPPORTUNITY TO BUY.

50 New Victors, various sizes.
28 Beattie & Hepworth & Abel loopers.
4 Corneley embroidery machines.
10 Hosiery presses (lever).
1 Bruce folder and cutter.
11 Lamb and Grosser sweater machines.
150 Ribbed underwear machines, various sizes and makes.
1 Speed lathe. 1 Sensitive drill.
60 Brinton & Co. ¾ aut. knitters, sizes.
27 Standard A machines.
56 Union Special machines, various styles.
1 Rotary fire pump.
1 5 h. p. electric motor.
40 Mayo machines.
100 Brooks welters.
4 Fleecing machines.
98 Brinton & Co. and other make hosiery ribbers.
36 Invincible machines, 176 needles, almost new.
1 Wayburn fabric cutter.
40 Ribbed shirt machine cylinders and dials, all sizes, cuts and makes.
2 Smith & Drum singeing machines.
250 Doz. Cyclone underwear dryer.
1 Sandusky mangle, 60-inch.
1 36-inch engine driven extractor.
1 Hollow roller hosiery press.
2 Lindsay & Hyde winders.
2 No. 35 Merrow small shell machines.
1 Industrial over-seamer.
2 Typewriters.
2 Cyclone hosiery dryers.
5 Band folding and cutting machines.
1 48 spindle Payne Cop winder.
1 Hemphill Rib-cutter.
4 30-inch ventilating fans.

WRITE FOR COMPLETE LIST.

APPRAISEMENTS A SPECIALTY.

We are always in the market to buy ood second-hand Knitting and Finishing Machinery.



High Speed Rib Knitting Machinery.

Our latest model machinery has been designed to run at **very high speed**, giving large production. This is accomplished with fewer seconds, less breakage of needles, less jar and wear and tear on machines than has been customary at lower speeds.

We also make Special

STRIPING AND DESIGNING MACHINES

for Fancy Golf Stockings, Bathing Suits, Sweaters, Toques, Toboggan Caps, Skirts, etc.

Our Machinery gives large production at low cost and enables manufacturers to meet the market always and make a profit.

STAFFORD & HOLT,

LITTLE FALLS, N. Y.

TRADE MARK.

WILLCOX & GIBBS SEWING MACH. CO. NEW YORK

BUSINESS ESTABLISHED IN 1850.

TRADE "OVERLOCK" MARK

MACHINE

Patented April 5, 1892

Patent twice upheld by U. S. Court of Appeals

For Trimming, Seaming (or Hemming or Overedging) and Covering Raw Edges of Knit Underwear in ONE OPERATION

VOLUNTARY TESTIMONIALS

TELEPHONE 4640 GRAMERCY

O. J. SCHOENHERR, PRESIDENT — ALBERT KROHN, MANAGER

THE ORIGINAL LINEN MESH UNDERWEAR — SCHOENHERR & CO. COLOGNE — ESTABLISHED 1880 IN COLOGNE, GERMANY

Schoenherr

ORIGINAL LINEN MESH CO.

103 FIFTH AVENUE

New York. October 17th 1904.

Messrs. Willcox & Gibbs S.M.Co.
City

Gentlemen,

We have much pleasure in informing you of the fact that, according to telegraphic advices received today from St. Louis, we have been awarded the "Grand Prix" for Underwear at the Louisiana Purchase Exposition.

To not a small extent we attribute our success to the splendid work of your "overlock" and felling machines. –

Very truly yours
Schoenherr Original L.M.Co.
Albert Krohn Mgr.

EXTRACT FROM THE REPORT DATED JULY 26, 1899 OF THE U. S. CONSUL AT NOTTINGHAM, ENGLAND

"The Overlock stitching device of Willcox & Gibbs has had a phenomenal success since the date of its introduction.* * * The keen competition among manufacturers has necessitated its use, both as a matter of economy and to improve the character of output for a discriminating market."

Willcox & Gibbs Sewing Machine Co.

GENERAL OFFICES

658 Broadway, Cor. Bond Street, New York

Branches: LONDON PARIS MILAN DRESDEN

SMALL RIB MACHINES
CROCHET MACHINES

NATIONAL

SHELL STITCH
MACHINES

Spring Beard Needle Machine
For SEAMLESS HOSIERY, Plain and Novelties

Automatic Rib Machine
For RIBBED UNDERWEAR. All Styles and Cauges

Over Seam Machine "Champion Improved"
For Welting Seamless Hosiery. Covering Raw Edges of Rib Fabrics.

NATIONAL AUTOMATIC KNITTER CO.
SEND FOR FULL PARTICULARS
724-726-728 Cherry St., Philadelphia

WOLFGANG RICHTER,
Importer and Builder of
Full Fashioned Knitting Machinery
N. E. Corner Third and Green Streets,
PHILADELPHIA, PA.

"The best is cheapest."

The Knitting Machines Made by

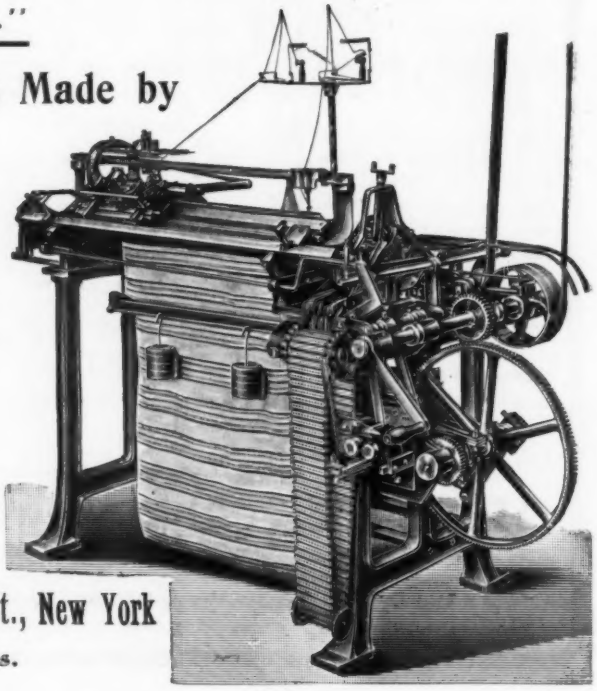
WILHELM BACH,

Apolda, Germany

are made of the highest grade tool steel, best constructed, and more durable than any other machines on the market for

Knitting Fancy Vests, Sweaters, Golf Jackets, etc.

Fully Automatic Power Machines a Specialty.



D. Rheinauer & Co., 136 Greene St., New York
American Selling Agents.

PAXTON & O'NEILL'S

3-4 AUTOMATIC KNITTER

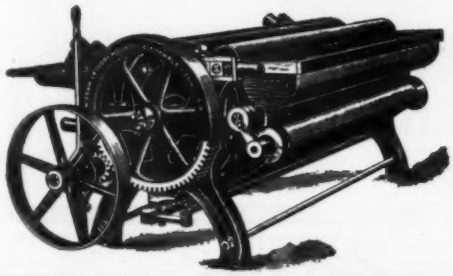
FOR ALL KINDS AND GUAGES OF SEAMLESS HOSIERY.

Has the preference wherever used over 7-8 and full automatics. Because it makes as much or more goods and bet'er goods. Costs less for repairs. Gives less trouble to fixers. Range on Half Hose, from the coarsest to 280 needle.

Exclusive rights to BROWN'S ATTACHMENTS FOR LACE EFFECT.

Cylinders and Dials for all size Machines. **127 Bread Street, Phila.**

AUTOMATIC IRONING and PRESSING MACHINE for KNIT GOODS.



This machine irons and presses ribbed and flat underwear, giving a fine, smooth finish and most attractive appearance to the goods, not to be obtained in any other way. It does not break buttons. Inexpensive and easy to operate, and has large capacity. Knitting mills using them are greatly pleased with results. This method of finishing is sure to come into universal use. Send for further particulars to

J. W. CRAW LAUNDRY MACHINERY CO.,
SOUTH NORWALK, CONN.

HEPWORTH & CO.'S

Patent Single-Stitch

LOOPING MACHINE.

Needle working from the inside, avoiding the breaking of needles and points and picking up the metal.

Single and Double Stitch, or Both Combined.

JOHN W. HEPWORTH & CO.,
N. W. Cor. Lehigh Ave. and Mascher Street,
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Drying Forms.

BOARDS FOR FAST BLACK DYERS.

HOSIERY FINISHING BOARDS.

BEST WORK. PROMPT SERVICE. PRICES ALWAYS RIGHT.

JOS T. PEARSON 1815-21 TAYLOR ST. KENSINGTON PHILA

Hosiery Boards.

EXCELSIOR KNITTING MACHINE MFG. CO.

BUILDERS OF

Full Automatic Knitters

WITH OR WITHOUT

Transferring Device

ALL SIZES AND GAUGES, 2 1-4 INCH TO 4 INCH

MEADOW AND WASHINGTON STREETS ALLENTOWN, PA.

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MANUFACTURER OF

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Flat and Circular Rib, both Spring and Latch Needle, Plain Circular Machines, Lead or Trick Cylinder. **Spring Needle Cylinder Rib-Top Machines**, for making Cuffs, Drawer Bottoms and Shirt Borders. **Spring and Latch Knitting Needles, Burr Wheels, Burr Blades, Sinkers, Jacks, etc.**

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European Representatives,
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Nottingham, England.

C. J. SIBBALD, General Representative, 757 River St., Troy, N. Y.

Boss Knitting Machine Works,

READING, PENN.

BUILDERS OF THE

NEW IMPROVED

15/16 Automatic

Hosiery Knitting Machine.

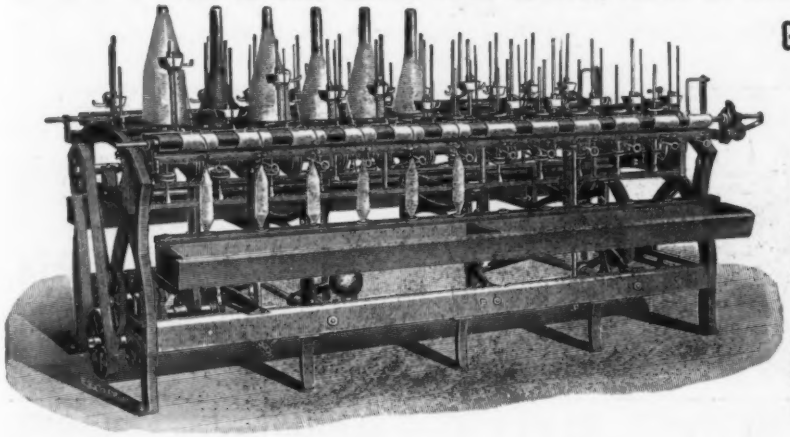
WATCH THIS SPACE!

Illustrated description will appear next month.

GEO. W. PAYNE, Prest. J. MILTON PAYNE, Treas. CLINTON F. PAYNE, Sec'y.

OVER 1,650 PAYNE WINDERS IN USE

For Hosiery Mfrs., Wind for Cop, Skein or Bobbin.



GEO. W. PAYNE CO.,

[Est. 1865. Inc. 1903.]

Builders of the

Improved

Upright Spoolers,

To Spool from Cop, Skein or Bobbin.

Doubling Spoolers, for doubling 2, 3, or more ends into one,

Upright Quillers, Quill from Cop, Skein or Bobbin.

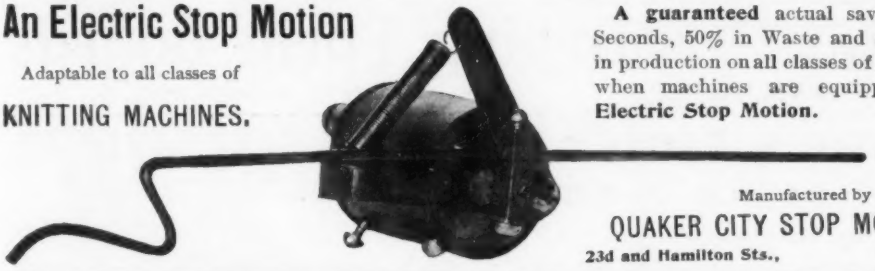
Ring Dresser, Spooler and Reel Spindles, Cop Skewers, Warp, Spool, Spooler, Guides, Bolsters and Stops Made and Repaired at Short Notice.

OFFICE, 102 BROAD STREET
Pawtucket, R. I.

An Electric Stop Motion

Adaptable to all classes of

KNITTING MACHINES.



A guaranteed actual saving of 90% in Seconds, 50% in Waste and a 30% increase in production on all classes of Knitted Goods, when machines are equipped with this **Electric Stop Motion.**

Manufactured by

QUAKER CITY STOP MOTION CO.,

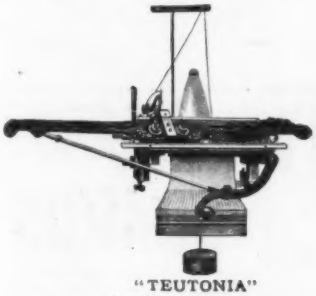
23d and Hamilton Sts., Philadelphia, Pa.

SEYFERT & DONNER, CHEMNITZ, GERMANY.

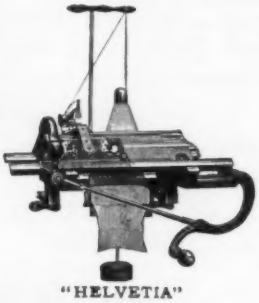
BUILDERS OF ALL KINDS OF

Flat Knitting Machines

(LATCH NEEDLES.)



"TEUTONIA"



"HELVETIA"

More than thirty different Models of **Hand Knitting Machines.** Special Machinery for Fancy Gloves, Fronts of Cardigan Jackets, Golf Hose, Sweaters, etc., etc. **Patentees and Sole Makers of the "TEUTONIA" KNITTER** the very best hand-machine for the manufacture of plain, seamless hose and half hose with Griswold heel, narrowed leg and toe. **FULL AUTOMATIC POWER KNITTING MACHINES, Independent Heads,** for making Rib Tops, Sweaters in 1 and 1 and Half Cardigan Rib, 2 and 2 Ribbed Ladies' Vests, Scarfs, Shirt and Shaker Bodies, etc. **FULL AUTOMATIC FANCY JACQUARD KNITTING MACHINES, Power Motion. AUTOMATIC NARROWING MACHINES—Power Motion—3, 4, 6, 8, 10 heads** for making plain, seamless legs of Ladies' Hose (full fashioned), plain, fashioned seamless Pants and Sleeves, Ribbed Pants and Sleeves, Cardigan Jackets, Cardigan Sleeves (narrowed and widened), etc.

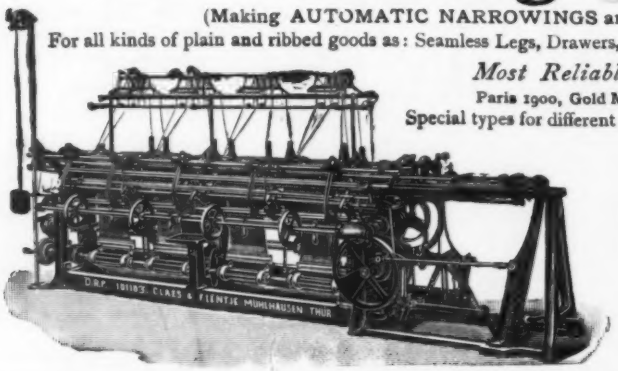
Sole Agent for the United States, JULIUS MULLER, 132 Melrose Street, Brooklyn, N.Y.
Reduction of Prices on Hand Machines of all kinds.

FULL AUTOMATIC

Fashioning-Machine

(Making AUTOMATIC NARROWINGS and WIDENINGS)

For all kinds of plain and ribbed goods as: Seamless Legs, Drawers, Combinations, Sleeves, Suits. Blouses, etc.



Most Reliable and Productive Machine!

Paris 1900, Gold Medal! Paris 1900, Gold Medal!

Special types for different articles. Number of heads to order.

Automatic Sweater Machine

With Independent Heads, Latest Improvements. Recognized as "The Best."

Ask for samples and particulars, state guage and size you need.

Claes & Flentje,

MÜHLHAUSEN, THÜR, GERMANY.

Representatives: Ainslie Knitting Machine Co., Ainslie and Humboldt Sts., Brooklyn, N. Y., where all kinds of hand and power machines can be seen working.

WILLIAM C. BULL,

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MAKER OF

For Ladies', Gents', and Children's Goods.

LATEST STYLES.

BEST WORKMANSHIP.

Drying Form Boards

OF EVERY VARIETY.

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CENTRAL STEAM FORGE

316 and 318 Florist St.,

PHILADELPHIA .. .. PENN.

The best equipped shop in the United States for the Manufacture of

Knitting Machine Cylinder

and Sinker Bed Ring Forgings, from the smallest to 30 in. dia. of the best steel.

LEWIS JONES,

60½ and Media Streets, . . . PHILADELPHIA.

GAS ENGINES for city or country
BRUSHING MACHINERY
KNITTING MACHINERY

} EFFICIENT DURABLE LOW IN PRICE

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2-COLOR WORK A SPECIALTY.

Printing Blocks made for the Trade. Best Work.

Special Designs a Feature. Lowest Prices.

KNIT FABRICS CUT TO LENGTH.

Our Knit Fabric Cutter

will cut from the roll, knit fabric into any length from 10″ to 40″ at the rate of 100 pieces a minute. The lengths are accurate, the waste is a minimum, the labor unskilled.

We also make a Slitter

for cutting these goods into narrow strips and re-winding same into rolls.

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Manufacturer of Paper Box Machinery.

812 Winter Street, Philadelphia, Pa.

HOSIERY

"None So Good."

The WISCONSIN MFG. CO.,

Two Rivers, Wis., U. S. A.

Our prices are the LOWEST and goods the BEST. Send for Catalogue and free samples.

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CRANE MFG. CO.

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Spring Needle Circular

KNITTING MACHINE.

For Hosiery, Shirts, Drawers, Jersey Cloth and Stockinet.

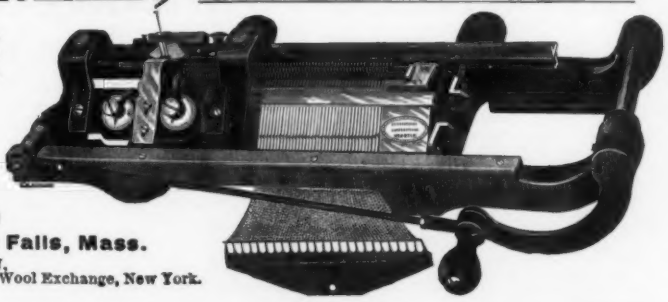
A Specialty of Hardened Bladed Burr Wheels with Self-Oiling Brackets.

The LAMB, LEADER OF KNITTERS,

Original and Still the Best.

Most widely used; being operated in every civilized country in the world. For description, prices, etc., see catalogue.

CIRCULAR MACHINES,
RIB TOP and
SEAMING MACHINES.



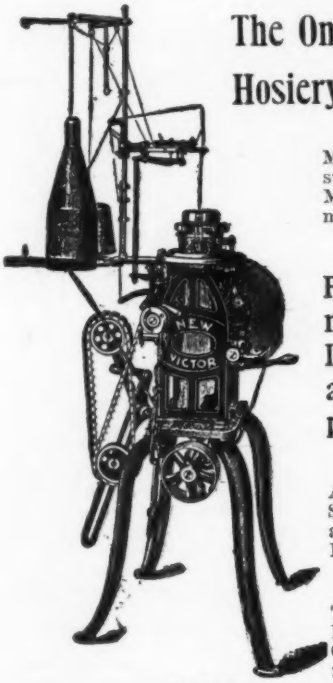
LAMB KNITTING MACHINE COMPANY,

P. O. Box 5888, Chicopee Falls, Mass.

J. E. WOODHEAD, 100 22d St., Chicago.

L. D. SANBORN, Room 505 Wool Exchange, New York.

The "New" Victor



The Only Reliable Hosiery Knitter.

More Simply Constructed than any Machine on the market.

Full Automatic and Interchangeable in all its parts.

A Two-Color Striper, also Lace and Combination Lace and Stripe.

The Best and only Positive Yarn Changer on the market.

Built by

American Knitting Machine Co.

Office and Works:

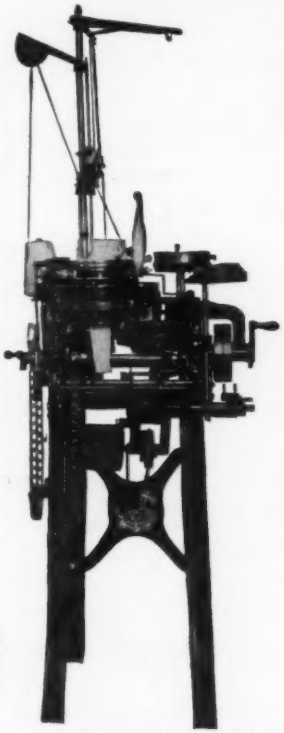
167 Oxford Street, PHILADELPHIA, PA.

Southern Branch:
Hendersonville, N. C.

We Know How

TO BUILD HOSIERY MACHINERY

That's Why There Are More Standards



in use than any other make.

Have you seen the new Standard F?

It will produce from **30%** to **50%** more goods than any other machine on the market.

Hosiery manufacturers are invited to inspect it in our show rooms.

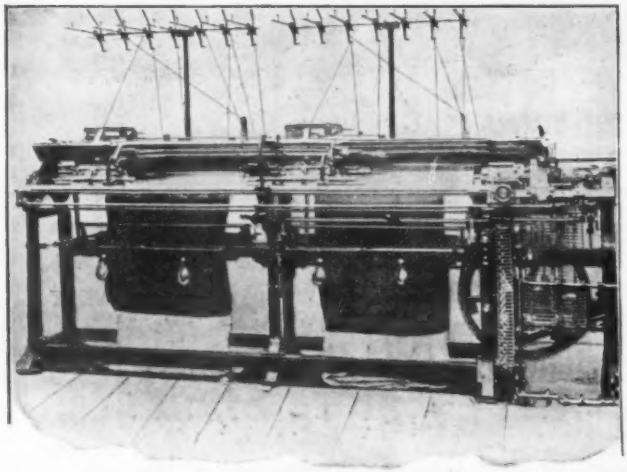
ARE YOU INTERESTED?

STANDARD MACHINE CO.,
508 Ludlow Street,
Philadelphia.

The Grosser Knitting Machine Co.

MAX NYDEGGER,

Wool Exchange Building, Room 400, 260 W. Broadway, NEW YORK.



Full Automatic Jacquard Nop Machines, Grosser.

The BEST in the market.
Most recent Improvements.
Easy to operate.
Any Pattern can be made without further expense for cards, etc.

All kinds of

Flat Knitting Machines, Grosser,

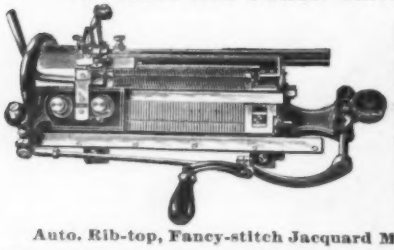
For hand and power motion.

Large stock in Machines, Parts and Needles.

Show Room in Philadelphia, 728 No. 4th St., Frank Reichenbach, Local Agent.

Best Knitting Machines

IMPROVED CONSTRUCTION
FOR HAND AND POWER DRIVING.



High Speed, Excellent Workmanship.

Auto. Rib-top, Fancy-stitch Jacquard Machines.

Everywhere in work. **80,000** Machines sold.

CLAES & FLENTJE,

Mühlhausen, Thür, Germany.

Agents for the East: Ainslie Knitting Machine Co., Ainslie and Humboldt Sts., Brooklyn, N. Y.
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TEXTILE MACHINE WORKS

THUN & JANSSEN, READING, PA.

Manfrs. of *BRAIDING MACHINES*

for making Dress Trimming Braids, Cotton Tapes, Underwear Braids, Shoe Laces, Spindle Banding, etc. Winders, Doublers. Measuring Machines, Reelers, Singeing and Finishing Machinery. Special machinery.

AMERICAN

Directory of the Knitting Trade

OF THE

United States and Canada.

Compiled by TEXTILE WORLD RECORD.
(Twenty-second year of publication.)

This Directory contains a most complete report of the knitting mills, giving names of officers, class of goods made, number of knitting machines, number employed, how the goods are sold, names of buyers, kind of yarn bought, whether dye or finish.

In dry goods section is a full list of manufacturers' selling agents and commission merchants handling knit goods, giving the names of the mills for which they sell and the man in charge of the knit goods department.

There are also complete lists of jobbers, department stores and large retail estalishments buying knit goods

The book is of convenient size for the pocket, well printed and handsomely bound.

Price $1.00.

LORD & NAGLE COMPANY, 293 Devonshire St., Boston

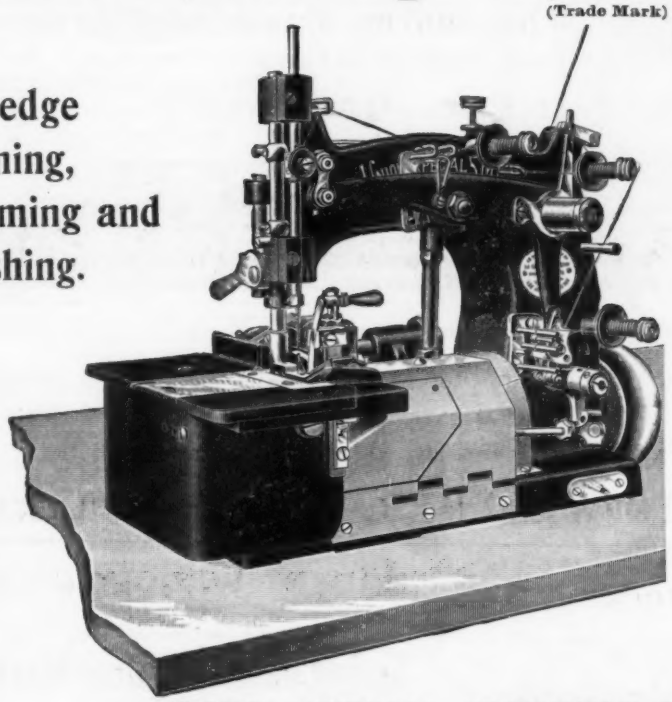
123 Liberty St., New York.
425 Walnut St., Philadelphia.

High Speed and Most Durable Mechanism are the Essential Elements of Machines to Produce Sewed Articles. We have these Elements in the

New Union Special Single "Interlock" Machine

(Trade Mark)

For Overedge Seaming, Hemming and Finishing.



High Speed Class 15400.

Two or Three Thread Stitch.

Simplicity.

Durability.

UNION SPECIAL MACHINE CO.

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731 Arch Street, Philadelphia.
9 Andrews Street, Rochester, N. Y.
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Machinist,

Repairs to Hosiery and Underwear Machines, Cylinders and Dials of every description.

FINE MACHINE WORK.

22 Armat Street, near Main, Germantown,

PHILADELPHIA, PA

We HARDEN all CYLINDERS and DIALS large and small.

Hegeman Seamless Bobbin Cover.

The best, cheapest and most satisfactory covering for winder bobbins. Will fit on any style or size.

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MILL SUPPLIES
Amsterdam, N. Y.
SOLE AGENT FOR
Adams' Patented Latch Needles

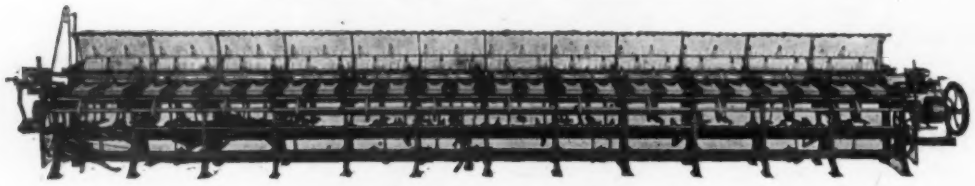
FULL-FASHIONED HOSIERY MACHINERY

.. BUILT BY ..

Chemnitzer Wirkwaaren-Maschinenfabrik

(Formerly SCHUBERT & SALZER)

CHEMNITZ, GERMANY.



HALF-HOSE LEGGER OF 24 SECTIONS.

All classes of flat work machines for full-fashioned hosiery in all gauges, from 21, 24, 27 up to 51 guage, from 12-24 sections, also machines for full-fashioned shirts and pants in all guages from 6-10 sections, with narrowing and widening.

Representative: OTTO WALTHER, 591 Bourse, PHILADELPHIA

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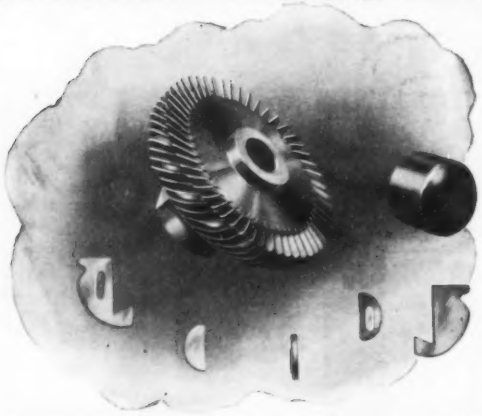


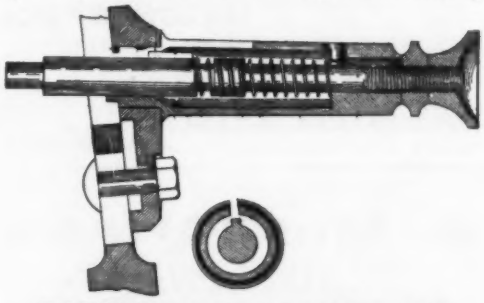
Tompkins Bros. Co., Troy, N. Y.
Circular Spring Needle Knitting Machinery.

ROBERT W. GORMLY & CO.

TROY, N. Y.

—BUILDERS OF—

Spring Needle Knitting Machinery



PATENT BURR STAND TUBE

The cheapest and best on the market with more and simpler adjustment than any other make.

WILFRED WELLS,

Sole Manufacturer of the

CHAMPION HOSIERY STAMP.

PATENTED JANUARY 7, 1896.

The Only Perfect Stamp for Hosiery, Underwear and all Woven Fabrics. BLOCKS FOR PRINTING HOSIERY.

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WM. COREY CO.,
Manufacturers of Knitting Machine
Latch Needles,
MANCHESTER, N. H.

EXCELSIOR NEEDLES.
The best Hosiery Needles in the market.
Manufactured by
WARDWELL NEEDLE CO., Lakeport, N. H.

W.M. BREEDON'S SON,
MANUFACTURERS OF
Spring Knitting Needles
AND BURR BLADES OF ALL KINDS.
AMSTERDAM, - N. Y.

ORION TREAT,
MANUFACTURER OF
Screw Riveted Balmoral and Double Rib
NEEDLES
(Patented May 6, 1890.)
All Work Guaranteed. MANCHESTER GREEN, CONN.

L. T. IVES CO.
Manufacturers of all kinds of
SPRING KNITTING NEEDLES
NEW BRUNSWICK, N. J.

PAGE NEEDLE CO.,
MANUFACTURERS OF
LATCH NEEDLES
of all kinds. Warranted in every respect.
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Agents: J. E. Woodhead, 100 Twenty-second Street, Chicago, Ill. Durbrow & Hearne Mfg. Co., 12 Wooster Street, New York. James Taylor, 835 Arch Street, Philadelphia, Pa.

Manufacturers' Supplies Co.
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Needles and Supplies for Knitting Mills.
Agents for EXCELSIOR NEEDLE CO., and NATIONAL NEEDLE CO.

EDWIN A. NEWTON,
KNITTING MILL MACHINERY AND SUPPLIES,
NEW AND SECOND HAND.
Exclusive Agent for the Hemphill Full Automatic Knitters.
245 Race St., Philadelphia, Pa.
Expert Appraisals on Machinery.

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MECHANICAL HEATING, VENTILATING AND DRYING, MECHANICAL DRAFT FANS

MASSACHUSETTS FAN COMPANY, WALTHAM, MASS.

$50,000.00 Subscribed

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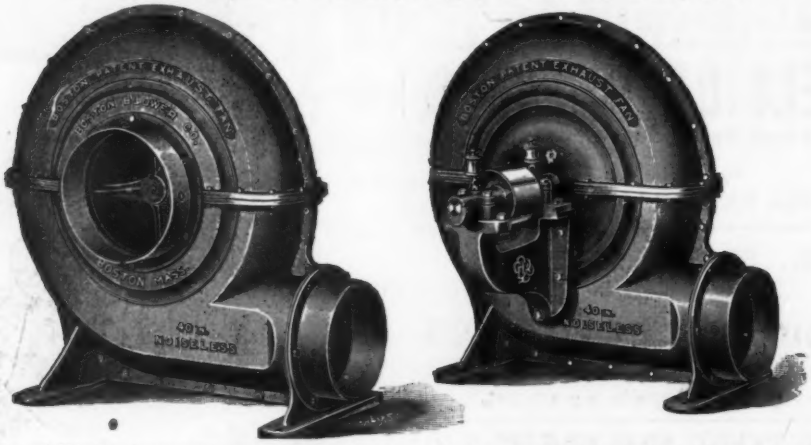
and the citizens of one of the best communities on our line are making determined efforts to locate a cotton mill and knitting mill.
They want to get in touch with a brainy, experienced operator, who can subscribe some stock and assume active management of the plant.
The immediate section produces cotton of the finest staple; the farmers themselves have subscribed stock and are interested in the success of the venture.
Cheap fuel, intelligent white labor, low rates on the finished product, are some of the attractive features.
For additional information address
J. W. WHITE,
General Industrial Agent, Portsmouth, Va.

SEABOARD AIR LINE RAILWAY
If you want to move your plant South write us.

Boston Wool Exhausters, with Removable Tops.

As used in Connection with Pneumatic Conveyor System for Handling Wool, Cotton, Rags, Excelsior, Jute, etc.



Inlet Side of Right-hand Wool Exhauster. **Pulley Side of Left-hand Wool Exhauster.**

This machine is similar in design to the regular Boston Patent Exhaust Fan, but is fitted with a special wheel for handling fibrous materials, and the top is removable.

This latter feature is especially desirable when handling wet or greasy materials or in handling anything, in fact, which would leave a deposit on the inside of fan, as the entire top may readily be removed for inspection or cleaning without disconnecting either pipe or belt connections.

BOSTON BLOWER CO., Main Office and Works: **Business and Glenwood Sts., HYDE PARK, MASS.**

Reels for Cotton WOOLEN AND WORSTED

Patented Hosiery Winders, Cop Winders and Spoolers.

LINDSAY, HYDE & CO.,

2124 to 2130 East York St., PHILADELPHIA, PA.

CHARLES H. SCHNITZLER,

Patentee and Sole Manufacturer of

THE PNEUMATIC CONVEYOR

For the handling of wool and cotton stock, rags, excelsior, jute and all kinds of fibrous material, wet or dry. Also spool elevators, steam heating and ventilating, and mill work generally. Blower and fan work a specialty. This conveyor is patented. Beware of infringement.

SATISFACTION GUARANTEED. Patented Oct. 15, 1889.

215 NORTH SECOND ST., - PHILADELPHIA, PA.

Water Wheel Governors

For TEXTILE MILLS

We Guarantee Satisfaction.

Replogle Governor Works

Write for Catalogue T. AKRON, OHIO.

ARE YOU IN NEED OF CUTS

IF SO, NOTIFY—

Smith Bros.

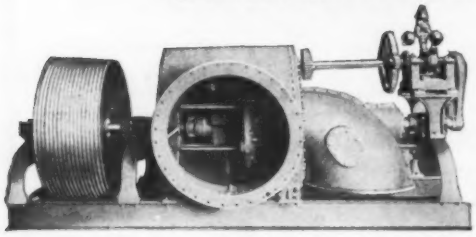
WOOD, ZINC & HALF-TONE ENGRAVING.

KNITTING MACHINERY & ALL KIND OF MECHANICAL WORK OUR SPECIALTY.

119 S. 4th Street

PHILADELPHIA, PA.

SAMSON TURBINE

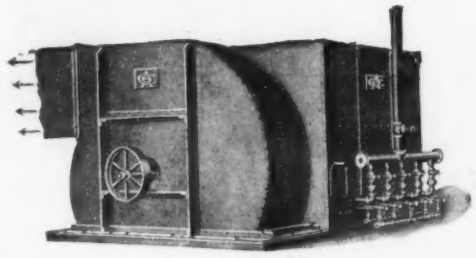


The higher the SPEED of a GENERATOR the LOWER its COST. We can SAVE YOU MONEY if you will use the SAMSON to drive the generator because there is not another turbine built that will attain as quick a SPEED when operating under the same conditions.

Write Department A-5 for Catalogue.

The James Leffel & Co., SPRINGFIELD, OHIO, U. S. A.

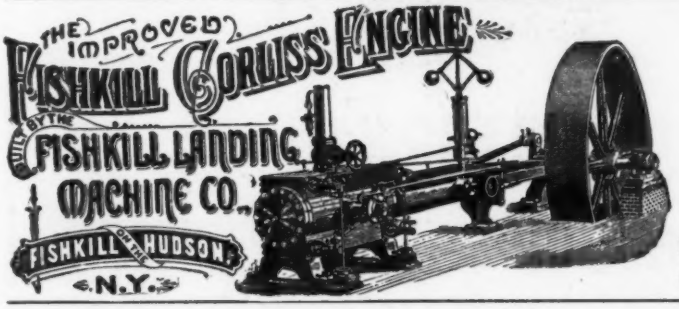
The "A B C" Fan System of Heating and Ventilating



Furnishes a constantly changing current of pure, fresh air heated to such a degree as to insure a uniformly comfortable temperature throughout every part of the mill. In addition, perfect ventilation is secured. Operating expense is reduced to minimum, as the apparatus utilizes exhaust steam.

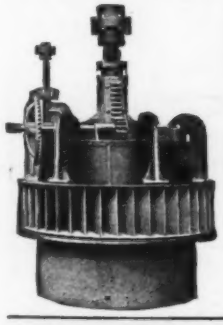
FANS AND BLOWERS FOR ALL PURPOSES.

AMERICAN BLOWER CO., Detroit.



Most Efficient and Economical Power in the world For Textile Mills.

It has NO EQUAL for Close Regulation and Noiseless Operation. Send for Catalogue.



Risdon-Alcott Turbine Co.

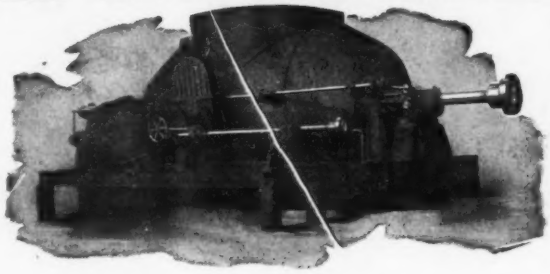
MOUNT HOLLY, NEW JERSEY, U. S. A.

RISDON CELEBRATED TURBINE
ALCOTT HIGH DUTY TURBINE

On Horizontal or Vertical Shafts.

These Turbines are recognized as the most effective water wheels made. Your inquiries should come direct to us for this class of machinery.

PAIR McCORMICK TURBINES

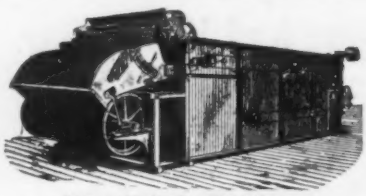


4,000 H. P., 72 ft. head, arranged to drive generator and a single turbine to drive exciter. Five settings built for the Hudson River Water Power Company's Spier Falls plant and 14 pairs 51 inch for their plant at Mechanicsville, N, Y.

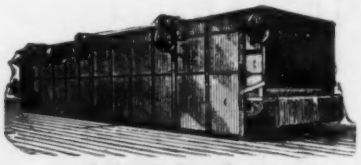
Write for Catalogue if contemplating purchase of turbines.

S. MORGAN SMITH CO.
YORK, PA.
Boston Office, 176 Federal Street.

NOV 14 1904.



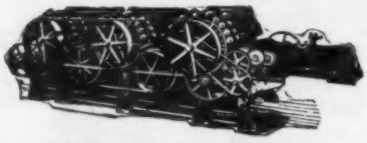
Automatic Cotton Stock Dryer.



Automatic Yarn Dryer.

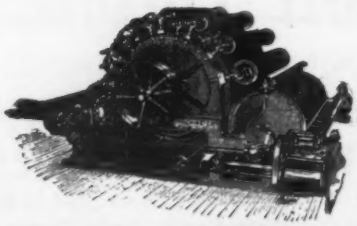
"CYCLONE" DRYERS

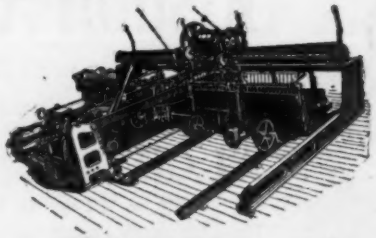
For Cotton Stock, Wool Stock, Rags,
Yarn, Cloth, Underwear, Stockings, Etc.



"PROCTOR"
Garnett Machines and Pickers

For reducing to fibre Cotton and Woolen
Waste, Cloth Clippings, Etc.





"FURBUSH" Woolen Mill Machinery

Including Pickers, Cards, Mules, Twisters,
Warpers, Dressers, Spoolers, Etc.

Manufactured by

THE PHILADELPHIA TEXTILE MACHINERY CO.,

Hancock and Somerset Sts., - PHILADELPHIA, PA.

Talks to Textile Manufacturers

CHAPTER IX

UNDERWEAR

To increase the sale of underwear is to identify it by name and trade-mark so that people can buy it again if they were pleased. Men and women seldom ask for underwear by name. They may prefer wool, cotton or perhaps silk, but it is not often that they know anything further than the material. They may go to a store and ask for "that kind you sold me last fall" and in most cases not get it because neither the salesperson nor the buyer can identify it by name.

My investigations prove that trade-marked underwear, which has been advertised by name, telling of its particular qualities, has increased in sales in proportion to its time before the public as an advertised article.

If you will write me a letter asking for statistics on textiles that you are particularly interested in, I shall be glad to send them without any cost to you.

THOMAS BALMER, Advertising Manager
The Butterick Trio
THE DELINEATOR—THE DESIGNER—NEW IDEA WOMAN'S MAGAZINE
Butterick Building **NEW YORK**

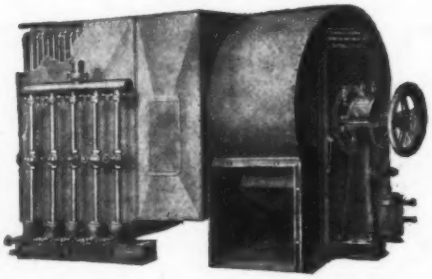
THE NEW FOSTER CONE

Open wind from start to finish of cone.
No press-offs from knots, overwinds, etc.
The only perfect system of winding yarn
for knitting purposes.

OVER 30,000 SPINDLES IN USE IN THE U. S.

FOSTER MACHINE CO.,

WESTFIELD, MASS.



Economical — Efficient — Reliable

THE BUFFALO
FAN SYSTEM

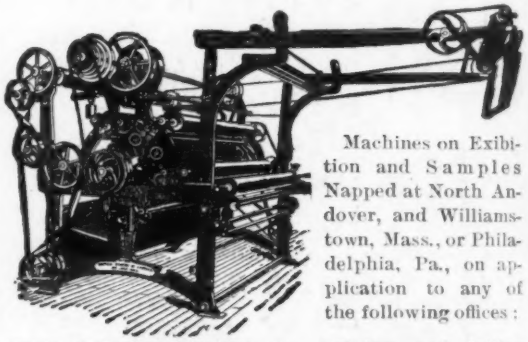
Of Heating — Ventilating — Drying
and Humidity Control
Used by America's Foremost Textile Mills.

Send for List

Buffalo Forge Company
BUFFALO, N. Y.

THE AMERICAN NAPPING MACHINE CO.

Own the principal patents on Napping Machines, representing the latest French, English and American Patents.



Machines on Exibition and Samples Napped at North Andover, and Williamstown, Mass., or Philadelphia, Pa., on application to any of the following offices:

Davis & Furber Machine Co., Builders and Selling Agents, North Andover, Mass.
Geo. S. Harwood & Son, 53 State St., Boston.
C. J. Jones, Salesman, No. 160 West Lehigh Avenue, Philadelphia, Pa.

H. H. HEAP, Treasurer and General Manager.
WILLIAMSTOWN, MASS.

Walworth Manufacturing Co.,

HIGH PRESSURE

VALVES AND FITTINGS

"Walmanco" Pipe Flanges,
"Never Stick" Blow-off Cocks, Mill Supplies.

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New York Office: Park Row Building.